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**AD-684 450**

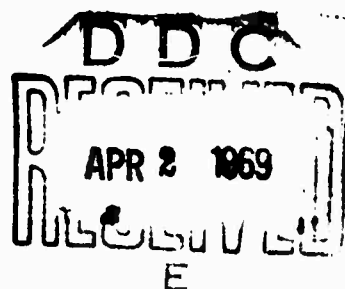
**A DDC BIBLIOGRAPHY  
ACCELERATION TOLERANCE**

**VOLUME I OF II VOLUMES**

**DDC-TAS-68-81**

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**FEBRUARY 1969**



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U N C L A S S I F I E D   a n d   U N L I M I T E D

AD-684 450

A DDC BIBLIOGRAPHY

ACCELERATION TOLERANCE

Volume I of II Volumes

DDC-TAS-68-81

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FEBRUARY 1969

DEFENSE DOCUMENTATION CENTER  
Cameron Station  
Alexandria, Virginia 22314

U N C L A S S I F I E D   a n d   U N L I M I T E D

## P R E F A C E

The tolerance for acceleration has been studied by experimentation on the centrifuge using human and animal subjects. Body positioning relative to the direction of the increased gravitational forces was found to be critical. In an upright position, the gravitational shifts of blood may leave the brain cells without adequate blood and oxygen supply causing "grayout" or "blackout" at 4 to 6g. On the other hand, when the accelerating forces are encountered at a right angle to the longitudinal axis of the body, the general distribution of blood is less affected and g-loads up to ten to twelve times earth gravity can be tolerated for 2 to 3 minutes. Moving or lifting any part of the body against such high centrifugal forces is restricted, because of the disproportion between the appropriate muscle groups and the increased weight of the body parts. Respiration, which involves lifting the chest and/or abdominal cavity wall, will become a laborious task. In a recumbent or semirecumbent position, the astronaut's tolerance for acceleration is limited because of the severe oxygen lack developing in the most vitally important organic systems.

This bibliography compiles 99 unclassified and unlimited references of documents that have been cataloged in the DDC collection.

The following indexes are provided; the examples refer to citations that appear in this bibliography.

### Subject Index

Asterisked descriptors that identify the most significant subjects of the report are arranged alphabetically in the subject index.

Example:

\*ACCELERATION TOLERANCE

Effect of Headward and Forward

Accelerations on the Cardiovascular  
System\*

AD-255 298

### Corporate Author/Monitoring Agency Index

This index arranges corporate authors and/or monitoring agencies alphabetically.

Example:

AFOSR-67-0871

An Inexpensive Variable - Radius  
Centrifuge for Physiological  
Experiments.

AD-650 331

### Personal Author Index

This index contains entries arranged alphabetically by the last names of the authors of reports. When one author is responsible for several reports, the citations are arranged numerically by AD number.

Example:

\*Brown, James H.  
\*\*\*\*\*

Acquisition and Retention of Nystagmic Habituation  
In Cats with Distributed Acceleration Experience.

AD-633 705

AD-Numeric Index

This index contains the AD number and page location of  
each reference cited.

The unclassified and limited version of this bibliography  
includes the unclassified and unlimited references. Volume II  
of this bibliography appears as AD-850 750

BY ORDER OF THE DIRECTOR, DEFENSE SUPPLY AGENCY

OFFICIAL



ROBERT B. STEGMAIER, JR.  
Administrator  
Defense Documentation Center

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00929

AD-255 298

MAYO CLINIC ROCHESTER MINN

EFFECT OF HEADWARD AND FORWARD ACCELERATIONS ON THE  
CARDIOVASCULAR SYSTEM (U)

JAN 61

1V

WOOD, EARL H.; SUTTERER, WILLIAM F.;

CONTRACT: AF33 616 5938

UNCLASSIFIED REPORT

DESCRIPTORS: \*ACCELERATION TOLERANCE, \*CARDIOVASCULAR  
SYSTEM, PHYSIOLOGY, RESPIRATION (U)

UNCLASSIFIED

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200529

AD-257 737

DOUGLAS AIRCRAFT CO INC EL SEGUNDO CALIF  
SOME NOTES ON THE PHYSIOLOGICAL TOLERANCE TO  
ACCELERATION

(U)

FEB 61 IV LEVEDAHL, B.H.;

REPT. NO. ES 40253

CONTRACT: NDNRI07600

UNCLASSIFIED REPORT

DESCRIPTORS: \*ACCELERATION TOLERANCE, \*MAN,  
\*PRIMATES, BLACKOUT (PHYSIOLOGY), CARDIOVASCULAR  
SYSTEM, DECELERATION, EJECTION SEATS, FATIGUE  
(PHYSIOLOGY), PHYSIOLOGY, POSTURE, SURVIVAL

(U)

UNCLASSIFIED

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200529

AD-260 549

NAVAL AIR DEVELOPMENT CENTER JOHNSVILLE PA AVIATION  
MEDICAL ACCELERATION LAB  
ACCELERATION PROTECTION BY MEANS OF STIMULATION OF  
THE RETICULO-ENDOTHELIAL SYSTEM (U)

JUN 61 IV STIEHM, E.R.:

REPT. NO. MA 6129

UNCLASSIFIED REPORT

DESCRIPTORS: \*ACCELERATION TOLERANCE, DOSAGE,  
LABORATORY ANIMALS, RETICULO-ENDOTHELIAL SYSTEM,  
STIMULATION, STRESS (PHYSIOLOGY), SURGERY, SURVIVAL,  
TOXINS + ANTITOXINS (U)

STIMULATION OF THE RATS' RETICULO-ENDOTHELIAL SYSTEM  
(RES) WAS EFFECTIVE IN ENHANCING THE TOLERANCES TO  
HIGH G ACCELERATION STRESS. UTILIZING 10 DAILY  
CONSECUTIVE INTRAPERITONEAL INJECTIONS OF ENDOTOXIN  
AT INCREASING DOSES FROM 100 TO 1200 MICRO GRAMS, THE  
MEDIAN SURVIVAL TIME OF 122 RATS UNDERGOING 20  
POSITIVE G ACCELERATION WAS INCREASED FROM A  
CONTROL LEVEL OF 9.7 MIN TO 14.2 MIN. ONE GROUP OF  
48 RATS HAS A MEDIAN SURVIVAL OF 23.6 MIN COMPARED TO  
A CONTROL LEVEL OF 11.3 MIN. THE PROTECTIVE ACTION  
OF RES STIMULATION AND THE INHIBITORY ACTION OF  
RES BLOCKADE WAS EFFECTIVE IN RATS WITH NORMAL OR  
PROLONGED SURVIVAL BUT NOT IN RATS WITH DIMINISHED  
TOLERANCE BEFORE STIMULATION OR BLOCKADE. AN  
ANALYSIS OF FACTORS FOR OPTIMAL RES STIMULATION IS  
PRESENTED AS ARE POSSIBLE MECHANISMS OF ACTION.  
(AUTHOR O) (U)

UNCLASSIFIED

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00929

AD-262 428

ARMED FORCES-NRC COMMITTEE ON BIO-AERONAUTICS WASHINGTON  
D C

ROTATION DEVICES, OTHER THAN CENTRIFUGES AND MOTION  
SIMULATORS: THE RATIONALE FOR THEIR SPECIAL  
CHARACTERISTICS AND USE (U)

APR 60 IV GUEDRY, FREDERICK E.; GRAYBIEL, ASHTON  
REPT. NO. P902

UNCLASSIFIED REPORT

DESCRIPTORS: \*AVIATION MEDICINE, \*FLIGHT SIMULATORS,  
\*PHYSIOLOGY, \*ROTATION, \*STRESS (PHYSIOLOGY),  
ACCELERATION, ACCELERATION TOLERANCE, BIOPHYSICS,  
FLIGHT, SPACE ENVIRONMENTAL CONDITIONS, SPACE FLIGHT, (U)  
SPACE MEDICINE

UNCLASSIFIED

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY    SEARCH CONTROL NO. Z00929

AD-266 076

ARMED FORCES-NRC COMMITTEE ON BIO-ASTRONAUTICS WASHINGTON

D C

HUMAN ACCELERATION STUDIES

(U)

DEC 61

IV

BATES, GEORGE I CLARK, CARL C. I

REPT. NO. 912

UNCLASSIFIED REPORT

DESCRIPTORS:    •ACCELERATION, •INDEXES, •VOCABULARY,  
ACCELERATION TOLERANCE, CENTRIFUGES, SPACE MEDICINE,  
TEST EQUIPMENT

(U)

UNCLASSIFIED

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DDC REPORT BIBLIOGRAPHY    SEARCH CONTROL NO. 200929

AD-266 077

ARMED FORCES-NRC COMMITTEE ON BIO-ASTRONAUTICS WASHINGTON  
D C

REPORTS ON HUMAN ACCELERATION

(U)

DEC 61        IV        HIATT, EDWIN P. (HEEHAN, J.P.)

GALAMBOS, ROBERT;

REPT. NO. 901

UNCLASSIFIED REPORT

DESCRIPTORS:    \*ACCELERATION TOLERANCE, \*REPORTS, MAN,  
PATHOLOGY, PHYSIOLOGY, SAFETY, SENSORY MECHANISMS,  
STRESS (PHYSIOLOGY), STRESS (PSYCHOLOGY), TEST  
METHODS, TESTS, THRESHOLDS (PHYSIOLOGY), VISION,  
WOUNDS + INJURIES

(U)

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ODC REPORT BIBLIOGRAPHY    SEARCH CONTROL NO. 200529

AD-266 078

ARMED FORCES-NRC COMMITTEE ON BIO-ASTRONAUTICS WASHINGTON  
D C

MOTION DEVICES FOR LINEAR AND ANGULAR OSCILLATION AND  
FOR ABRUPT ACCELERATION STUDIES ON HUMAN SUBJECTS  
(IMPACT). A DESCRIPTION OF FACILITIES IN USE AND  
PROPOSED

(U)

DEC 61        IV        VON GIERKE, HENNING E.;  
STEINMETZ, EUGENE;  
REPT. NO. 902

UNCLASSIFIED REPORT

DESCRIPTORS:    •ACCELERATION TOLERANCE, •MAN,  
•OSCILLATORS, •TEST FACILITIES, AIR BURST,  
DECELERATION, IMPACT SHOCK, LINEAR ACCELERATORS,  
MOTHS, MOTION SICKNESS, PARTICLE ACCELERATORS,  
PHYSIOLOGY, TEST EQUIPMENT, VIBRATION, VOLUME

(U)

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ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00529

AO-268 189

UNIVERSITY OF SOUTHERN CALIFORNIA LOS ANGELES SCHOOL OF  
MEDICINE

THE EFFECTS OF TRANSVERSE ACCELERATIONS AND  
EXPONENTIAL TIME-LAG CONSTANTS ON COMPENSATORY  
TRACKING PERFORMANCE

(U)

SEP 61 IV KASHLER, RICHARD C. I

CONTRACT: AF33 616 5407

MONITOR: ASO TR61 457

UNCLASSIFIED REPORT

DESCRIPTORS: \*ACCELERATION TOLERANCE, \*RECORDING  
SYSTEMS, ANALYSIS OF VARIANCE, ERRORS, HUMAN  
ENGINEERING, MAN, MEASUREMENT, PHOSPHONITRILE  
CHLORIDES, REACTION (PSYCHOLOGY), REFLEXES, ROLL,  
STRESS (PHYSIOLOGY)

(U)

A STUDY WAS CONDUCTED TO DETERMINE THE EFFECTS AND  
INTERACTIONS OF FRONT-TO-BACK TRANSVERSE  
ACCELERATIONS, IN THE MAGNITUDES OF 0, 2 G, AND 6 G,  
AND EXPONENTIAL TIME-LAG CONSTANTS OF 0.1, 1.0 AND  
2.0 SECONDS ON HUMAN CONTROL PERFORMANCE ON A  
COMPENSATORY TRACKING TASK. IN GENERAL, THE  
RESULTS SUBSTANTIATED PREDICTIONS OF HUMAN TRACKING  
PERFORMANCE BASED ON HELSON'S U-HYPOTHESIS AND  
PRINCIPLE OF GENERALITY. CONCEPTS FROM  
INFORMATION THEORY ARE INTRODUCED TO EXPLAIN CERTAIN  
LEARNING PHENOMENA WHICH OCCURRED IN THE COURSE OF  
THE EXPERIMENT. (AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00529

AD-268 791

NAVAL SCHOOL OF AVIATION MEDICINE PENSACOLA FLA  
SYMPTOMATOLOGY DURING PROLONGED EXPOSURE IN A  
CONSTANTLY ROTATING ENVIRONMENT AT A VELOCITY OF ONE  
REVOLUTION PER MINUTE (U)

SEP 61 IV KENNEDY, ROBERT S.; GRAYBIEL, ASHTON;  
REPT. NO. 62

UNCLASSIFIED REPORT

DESCRIPTORS: \*ACCELERATION TOLERANCE, \*MOTION  
SICKNESS, \*SPACE MEDICINE, MAN, ROTATION, STIMULATION,  
STRESS (PHYSIOLOGY) (U)

EIGHT SUBJECTS WERE SYSTEMATICALLY OBSERVED ON  
CERTAIN TASKS ABOARD THE PENSACOLA SLOW  
ROTATION ROOM AT A VELOCITY OF ONE RPM.  
PILOT EXPERIMENTS INDICATED THE GREAT MAJORITY OF  
UNSELECTED SUBJECTS WOULD BE SYMPTOM FREE AT THIS  
SPEED. CONSEQUENTLY, FOUR SUBJECTS WERE SELECTED  
WHOSE SUSCEPTIBILITY TO CANAL SICKNESS AND MOTION  
SICKNESS WAS FAR ABOVE AVERAGE. THE FINDINGS  
WARRANTED THE CONCLUSION THAT UNDER THE CONDITIONS OF  
THIS EXPERIMENT, EXPOSURE TO A CONSTANTLY ROTATING  
ENVIRONMENT ON ONE RPM DOES NOT HANDICAP THE  
PERFORMANCE OF PERSONS WITH FAR GREATER THAN AVERAGE  
SUSCEPTIBILITY TO CANAL SICKNESS. (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00529

AO-268 793

NAVAL SCHOOL OF AVIATION MEDICINE PENSACOLA FLA  
THE APPEARANCE OF COMPENSATORY NYSTAGMUS IN HUMAN  
SUBJECTS AS A CONDITIONED RESPONSE DURING ADAPTATION  
TO A CONTINUOUSLY ROTATING ENVIRONMENT (U)

AUG 61 IV GUEORY, F.E. JR.; GRAYBIEL, A.;  
REPT. NO. 61

UNCLASSIFIED REPORT

DESCRIPTORS: \*ACCELERATION TOLERANCE, \*CONDITIONED  
REFLEX, \*EYE, \*ROTATION, STRESS (PHYSIOLOGY), TESTS (U)

SEVEN MEN LIVED IN A ROTATING ROOM (3.4 RPM)  
FOR 64 HOURS. CONTROLLED TESTS BEFORE AND DURING  
THIS INTERVAL DEMONSTRATED THAT CORIOLIS VESTIBULAR  
PHENOMENA INCLUDING CORIOLIS NYSTAGMUS DIMINISHED  
MARKEDLY. A COMPENSATORY NYSTAGMUS, INDUCED BY  
HEAD OR WHOLE BODY MOVEMENTS, WAS RECORDED MORE THAN  
ONE HOUR AFTER THE ROTATION HAD CEASED. FACTORS OF  
POSSIBLE SIGNIFICANCE IN CONDITIONING THE  
COMPENSATORY NYSTAGMUS ARE: (1) OTOLITH AND  
PROPRIOCEPTOR SENSORY INFLUX PRIOR TO AND DURING  
DISCORDANT CANAL INPUT; (2) A CONSISTENT SENSORY  
INFLUX FOR EACH STIMULUSPRODUCING MOVEMENT; (3)  
INTENTION IN STIMULUSPRODUCING MOVEMENTS; AND (4)  
VISUAL INHIBITION. CONTRIBUTIONS OF COMPENSATORY  
AND AROUSAL FACTORS TO VESTIBULAR SUPPRESSION ARE  
CONSIDERED IN RELATION TO PRACTICAL PROBLEMS OF  
TRANSFER OF HABITUATION FROM ONE ACCELERATION  
ENVIRONMENT TO ANOTHER. (AUTHOR) (U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00529

AD-269 488

NAVAL AIR DEVELOPMENT CENTER JOHNSVILLE PA AVIATION  
MEDICAL ACCELERATION LAB

INCREASE IN ACCELERATION TOLERANCE OF THE RAT BY 2-  
DIMETHYLAMINOETHYL P-CHLOROPHOXYACETATE  
(LUCIORIL)

(U)

NOV 61

IV

POLIS, B. DAVIOI

REPT. NO. 6176

UNCLASSIFIED REPORT

DESCRIPTORS: •ACCELERATION TOLERANCE,  
•CHEMOTHERAPEUTIC AGENTS, •DRUGS, •PHARMACOLOGY,  
ACETATES, PHENOXY RADICALS, STRESS (PHYSIOLOGY),  
SURVIVAL

(U)

THE DIMETHYLAMINOETHYL ESTER OF  
PARACHLOROPHOXYACETIC ACID ENHANCED SIGNIFICANTLY  
THE TOLERANCE OF RATS TO ACCELERATION AT 20 G. THE  
MEDIAN SURVIVAL TIME OF TREATED ANIMALS INCREASED TO  
33.3 MIN, ALMOST A THREEFOLD INCREMENT. THE  
EFFECTIVENESS PERSISTED ONLY FOR A PERIOD OF 4  
HOURS AFTER INJECTION. A LATENT PERIOD OF 3 TO 4 DAYS  
TREATMENT SEEMED NECESSARY BEFORE THE ENHANCED  
TOLERANCE TO ACCELERATION BECAME APPARENT. THE  
ACTIVITY OF THE DRUG WAS DOSE-DEPENDENT IN THAT NO  
SIGNIFICANT CHANGES IN ACCELERATION TOLERANCE WERE  
FOUND WITH A TOTAL INJECTION OF 50 MG; SIGNIFICANT  
INCREMENTS IN TOLERANCE WERE OBTAINED WITH 75 MG OF  
THE DRUG; MUCH LARGER INCREASES IN THE TOLERANCE TO  
ACCELERATION FOLLOWED ADMINISTRATION OF 100 MG OF  
LUCIORIL. THE NATURE OF THE PHARMACOLOGIC EFFECT  
SUGGESTS THAT THE DRUG ACTION PER SE IS MEDIATED VIA  
THE HYPOTHALAMIC AREA OF THE BRAIN, POSSIBLY IN  
INTERPLAY WITH THE BIOGENIC AMINES. THE LOW  
TOXICITY OF THE DRUG AND THE FACT THAT IT HAS ALREADY  
BEEN USED IN HUMANS IN HIGH DOSES WITH NO DELETERIOUS  
AND SOME PRESUMPTIVE BENEFICIAL EFFECTS LEADS TO THE  
PROPOSAL THAT THE COMPOUND MIGHT BE EFFECTIVE IN  
INCREASING HUMAN TOLERANCE TO ACCELERATION STRESS.  
(AUTHOR)

(U)

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ODC REPORT BIBLIOGRAPHY    SEARCH CONTROL NO. 200529

AO-269 651

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO  
BEFORE A MANNEO FLIGHT

(U)

AUG 61    IV    GILBERT, L. I

REPT. NO. MCL 1280

UNCLASSIFIED REPORT

DESCRIPTORS:    •ACCELERATION, •DECELERATION,  
CENTRIFUGES, GRAVITY, MANNEO, PHYSIOLOGY, ROCKET  
PROPELLED SLEOS, SIMULATION, SPACE FLIGHT, SPACECRAFT,  
WEIGHTLESSNESS

(U)

IDENTIFIERS:    USSR

(U)

THE EFFECT OF G-FORCES (ACCELERATION AND  
DECELERATION) AND OF WEIGHTLESSNESS ARE DISCUSSED;  
TEST EQUIPMENT ARE ALSO MENTIONED.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY    SEARCH CONTROL NO. Z00529

AD-272 332

SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX  
RESPONSE OF MAMMALIAN GRAVITY RECEPTORS TO SUSTAINED  
TILT (U)

IV        CRAMER, ROBERT L.;

UNCLASSIFIED REPORT

DESCRIPTORS:    \*ACCELERATION TOLERANCE, \*EAR, NERVES,  
PROPRIOCEPTION, STIMULATION, STRESS (PHYSIOLOGY),  
WEIGHTLESSNESS (U)

STUDIES WERE MADE OF THE BEHAVIOR OF SINGLE CELLS  
OF THE PROJECTIONS OF THE OTOLITH ORGANS IN  
OECEREBRATE AND OECELLEBRATE CAT AS THE PREPARATION  
WAS MAINTAINED FOR EXTENDED TIMES IN DIFFERENT  
POSITIONS RELATIVE TO THE EARTH'S GRAVITATIONAL  
FIELD. IN EVERY CASE STUDIED, IT WAS FOUND THAT  
THERE WAS A RATHER VIGOROUS INITIAL RESPONSE TO THE  
TILT AND THAT THIS RESPONSE DIMINISHED CONSIDERABLY  
OVER 15 TO 20 SECONDS; THE STEADY-STATE SIGNAL TO  
TILT WAS RELATIVELY WEAK. (AUTHOR) (U)

UNCLASSIFIED

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOD529

AO-282 883

AEROMEDICAL RESEARCH LAB (6571ST) HOLLoman AFB N MEX  
THE PHYSIOLOGICAL RESPONSES OF CHIMPANZEES TO  
SIMULATED LAUNCH AND RE-ENTRY ACCELERATIONS (U)

JUL 62 IV STINGELY, NORMAN E.  
REPT. NO. TDR62 11

UNCLASSIFIED REPORT

DESCRIPTORS: \*ACCELERATION TOLERANCE, \*PRIMATES,  
\*SIMULATION, ATMOSPHERE ENTRY, BLOOD VESSELS, HEART,  
INSTRUMENTATION, MEASUREMENT, NOISE, RESPIRATION,  
RESPIRATORY SYSTEM, URINARY SYSTEM, VIBRATION,  
WEIGHTLESSNESS (U)

IDENTIFIERS: MERCURY PROJECT (U)

FIVE MALE CHIMPANZEE SUBJECTS WERE EXPOSED TO  
SIMULATED SPACE FLIGHT CONDITIONS OF  
LAUNCH ACCELERATION AND ATMOSPHERIC RE-ENTRY  
DECELERATION. HEART AND RESPIRATION RATES SHOWED  
SIGNIFICANT DIFFERENCES FOR THE THREE CONDITIONS OF  
LAUNCH. THE CONDITIONS OF LAUNCH WERE: LAUNCH  
ACCELERATION ONLY, LAUNCH ACCELERATION WITH VIBRATION  
AND NOISE, AND LAUNCH ACCELERATION WITH NOISE,  
VIBRATION, URINARY TRACT CATHETERIZATION AND ARTERIAL  
AND VENOUS CATHETERIZATIONS. PHYSIOLOGICAL  
RESPONSES ASSOCIATED WITH LAUNCH AND RE-ENTRY  
DIFFERED SIGNIFICANTLY FROM THE BASELINE PERIOD THAT  
PRECEDED EACH OF THE LAUNCHES. PHYSIOLOGICAL  
CHANGES ASSOCIATED WITH RE-ENTRY WERE NOT AS SEVERE  
AS THOSE SEEN WITH LAUNCH. THE SUBJECTS RECOVERED  
FROM THE ENVIRONMENTAL STRESSORS OF BOTH LAUNCH AND  
RE-ENTRY VERY RAPIDLY. THE RESULTANT RESPONSES  
SHOULD BE GOOD PREDICTORS OF CHIMPANZEE CARDIAC AND  
RESPIRATORY ACTIVITY DURING THE CRITICAL ACCELERATION  
PHASES OF SPACE FLIGHT AND ALSO SERVE AS A BASELINE  
FOR THE STUDY OF THE EFFECTS OF WEIGHTLESSNESS  
FOLLOWING LAUNCH ACCELERATION AND PRIOR TO RE-ENTRY  
DECELERATION. (AUTHOR) (U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY    SEARCH CONTROL NO. Z00529

AD-286 930

TRW SPACE TECHNOLOGY LABS REDONDO BEACH CALIF  
PHYSIOLOGICAL AND PSYCHOLOGICAL EFFECTS OF SPACE  
FLIGHT: A BIBLIOGRAPHY. VOLUME 1. ACCELERATION,  
DECELERATION, AND IMPACT

(U)

IV    PRICE, J.F.;

UNCLASSIFIED REPORT

DESCRIPTORS:    \*ACCELERATION, \*ACCELERATION TOLERANCE,  
\*BIBLIOGRAPHIES, \*DECELERATION, \*SPACE FLIGHT, IMPACT  
SHOCK, MAN, SPACE MEDICINE, STRESS (PHYSIOLOGY),  
STRESS (PSYCHOLOGY), WEIGHTLESSNESS

(U)

A BIBLIOGRAPHY OF 1020 ANNOTATED REFERENCES ON  
ACCELERATION, DECELERATION, AND IMPACT STUDIES.

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DOC REPORT BIBLIOGRAPHY    SEARCH CONTROL NO. 200529

AO-287 996

AERONAUTICAL SYSTEMS DIV WRIGHT-PATTERSON AFB OHIO  
DESCRIPTION AND PERFORMANCE EVALUATION OF THE  
AEROSPACE MEDICAL RESEARCH LABORATORIES' VERTICAL  
ACCELERATOR

(U)

1V

LOWRY, R.O.; WOLFF, W.M.;

REPT. NO. TR61 743

MONITOR: ASD    TR61 743

UNCLASSIFIED REPORT

DESCRIPTORS:    •IMPACT SHOCK, •TEST FACILITIES,  
•VIBRATORS (MECHANICAL), ACCELERATION, SPACE MEDICINE,  
VIBRATION

(U)

THE AEROSPACE MEDICAL RESEARCH  
LABORATORIES' VERTICAL ACCELERATOR WAS DEVELOPED  
FOR BIOASTRONAUTICS RESEARCH TO SIMULATE VIBRATION  
AND BUFFETING ENCOUNTERED IN AEROSPACE OPERATIONS.  
THE DESIGN, MOTION CAPABILITIES, CONTROL AND SAFETY  
FEATURES ARE DESCRIBED. THIS VERTICAL ACCELERATOR  
CAN BE PROGRAMMED WITH PERIODIC OR RANDOM  
ACCELERATION PATTERNS OBTAINED FROM ACTUAL  
ENVIRONMENTAL MEASUREMENTS. IT IS A COMPLEX  
ELECTROMECHANICAL DEVICE EMPLOYING A UNIQUE TYPE OF  
FRICTION DRIVE TO MOVE A TEST PLATFORM WITH A 200-LB  
LOAD CAPACITY. THE ACCELERATOR, FOR CONTINUOUS  
OPERATION, CAN PRODUCE PEAK TO PEAK AMPLITUDES WITHIN  
5 FT OVER THE FREQUENCY RANGE FROM 0.5 CPS TO 10 CPS.  
THE MAXIMUM ACCELERATION OUTPUT IS FROM 2.5 TO 3  
G DEPENDING ON LOAD AND PERMISSIBLE DISTORTION.  
(AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00929

AO-288 979

LIBRARY OF CONGRESS WASHINGTON D C AEROSPACE TECHNOLOGY  
OIV

STANDARDIZATION OF CONSTANTS FOR AGE ESTIMATION BY  
THE ARGON METHOD (U)

AUG 62 1V

REPT. NO. 62 114

UNCLASSIFIED REPORT

DESCRIPTORS: \*ACCELERATION TOLERANCE, \*GEOLOGY,  
ARGON (U)

STANDARDIZATION OF CONSTANTS FOR AGE ESTIMATION BY THE  
ARGON METHOD.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200529

AD-420 258

NAVAL AIR DEVELOPMENT CENTER JOHNSVILLE PA AVIATION  
MEDICAL ACCELERATION LAB

THE EFFECT OF SEX ON THE G TOLERANCE OF RATS, (U)

AUG 63 10P REEVES, ELIZABETH I

PROJ: MR009 13 0002 3

MONITOR: NADC MA 6213

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (ACCELERATION TOLERANCE, SEX), (SEX,  
ACCELERATION TOLERANCE), RATS, AGING (PHYSIOLOGY),  
WEIGHT, STRESS (PHYSIOLOGY), REPRODUCTIVE SYSTEM,  
SURVIVAL, PHYSIOLOGY (U)

IDENTIFIERS: 1963 (U)

THREE GROUPS OF RATS WERE TESTED ON THE CENTRIFUGE  
AT 20 POSITIVE G TO ASCERTAIN WHAT EFFECT SEX  
MIGHT HAVE ON THE G TOLERANCE OF RATS. THE THREE  
GROUPS WERE: (1) AN EXPERIMENTAL GROUP OF 50  
FEMALE RATS OF ABOUT 4-1/2 MONTHS OF AGE AT TIME OF  
CENTRIFUGATION, (2) A CONTROL GROUP OF 50 MALE  
RATS OF THE SAME AGE AND (3) A CONTROL GROUP OF  
50 MALE RATS OF ABOUT THE SAME WEIGHT AS THE FEMALE  
EXPERIMENTAL GROUP. THE EXPERIMENT WAS PERFORMED  
TO DETERMINE ANY DIFFERENCES BETWEEN: (1) FEMALE  
AND MALE RATS OF THE SAME AGE, (2) FEMALE AND  
MALE RATS OF THE SAME WEIGHT, (3) FEMALE RATS IN  
THE ESTROUS AS OPPOSED TO THE DIESTROUS PHASE OF THE  
ESTRUS CYCLE AND (4) FEMALE RATS IN THE ESTROUS  
OR DIESTROUS PHASE AS COMPARED TO MALE RATS OF THE  
SAME AGE OR SAME WEIGHT. NO SIGNIFICANT  
DIFFERENCES WERE NOTED BETWEEN THE GROUPS.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00529

AD-420 284

NAVAL AIR DEVELOPMENT CENTER JOHNSVILLE PA AVIATION  
MEDICAL ACCELERATION LAB

THE EFFECT OF AGEING ON THE G TOLERANCE OF RATS. II.  
A COMPARISON AT ONE MONTH WITH SURVIVORS AT THREE  
MONTHS OF AGE, (U)

AUG 62 7P REEVES, ELIZABETH I  
MONITOR: NADC MA 6214

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*ACCELERATION TOLERANCE, MEDICAL  
RESEARCH), AGING (PHYSIOLOGY), STRESS (PHYSIOLOGY),  
RATS, SURVIVAL (U)  
IDENTIFIERS: 1962 (U)

A PRELIMINARY STUDY INDICATED THAT YOUNG RATS HAVE  
A GREATER RESISTANCE TO ACCELERATION STRESS OF 20  
POSITIVE G THAN DO MORE MATURE RATS. THE PRESENT  
STUDY COMPARED THE TOLERANCE OF ONE-MONTH OLD RATS  
WITH THREE-MONTH OLD RATS AT 20 POSITIVE G AND  
FOUND THAT THERE WAS A SIGNIFICANT DIFFERENCE IN  
FAVOR OF THE ONE-MONTH OLD ANIMALS. TWENTY RATS,  
WHICH SURVIVED THE INITIAL CENTRIFUGATION AT ONE  
MONTH OF AGE WERE RETESTED AT THREE MONTHS AND SHOWED  
NO SIGNIFICANT DIFFERENCE IN TOLERANCE WHEN COMPARED  
WITH CONTROL RATS ON THE SAME AGE. (AUTHOR) (U)

UNCLASSIFIED

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00529

AO-424 030

NAVAL AIR DEVELOPMENT CENTER JOHNSVILLE PA AVIATION  
MEDICAL ACCELERATION LAB  
PILOT BIOEICAL AND PSYCHOLOGICAL INSTRUMENTATION  
FOR MONITORING PERFORMANCE DURING CENTRIFUGE  
SIMULATIONS OF SPACE FLIGHT, (U)

OCT 63 29P CHAMBERS, RANDALL M. ;

NELSON, JOHN G. ;

MONITOR: NAOC MA ,NAVHEO

62081 ,MR005 13 6002 4,

REPT. NO. 3

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (CENTRIFUGES, ACCELERATION TOLERANCE),  
(MONITORS, CENTRIFUGES), (INSTRUMENTATION, SPACE  
MEDICINE), TRAINING, MEDICAL RESEARCH, PHYSIOLOGY,  
PILOTS, MEASUREMENT, PERFORMANCE TESTS, BEHAVIOR,  
PSYCHOLOGY (U)

IDENTIFIERS: 1963, HUMAN CENTRIFUGE,  
BIOINSTRUMENTATION, BIOEICAL MONITORING, X-20  
SPACECRAFT, TOLERANCES (PHYSIOLOGY), PERFORMANCE  
(HUMAN) (U)

THIS REPORT PRESENTS SOME OF THE RESULTS OF RECENT  
CENTRIFUGE ACCELERATION RESEARCH AND TRAINING  
PROJECTS IN WHICH THE BIOEICAL,  
PSYCHOPHYSIOLOGICAL, AND PSYCHOLOGICAL PERFORMANCES  
OF PILOTS WERE MONITORED AND MEASURED. MONITORING  
AND RECORDING INSTRUMENTATION TECHNIQUES ARE  
DESCRIBED, AND AN ATTEMPT IS MADE TO IDENTIFY AND  
QUANTIFY SOME OF THE CAPABILITIES AND LIMITATIONS OF  
PILOT PERFORMANCE DURING EXPOSURE TO ACCELERATIONS  
WHICH VARY IN MAGNITUDE, DURATION, DIRECTION, RATE  
OF ONSET, AND PROFILE COMPLEXITY. APPARATUS AND  
METHODS ARE PRESENTED AND DISCUSSED FOR MONITORING  
VISUAL DISTURBANCE, DISCRIMINATION AND RESPONSE  
BEHAVIOR, COMPLEX SKILL BEHAVIOR, AND AN APPROACH IS  
MADE TO THE PROBLEM OF MONITORING HIGHER MENTAL  
FUNCTIONING. THE PILOTS AND OTHER VOLUNTEERS IN  
THESE TRAINING AND RESEARCH PROGRAMS WERE THE 7  
MERCURY ASTRONAUTS, 6 DYNA-SOAR CONSULTANT  
PILOTS, APPROXIMATELY 35 OTHER TEST PILOTS, AND  
APPROXIMATELY 40 OTHER MILITARY AND CIVILIAN  
VOLUNTEERS. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00529

AO-424 922

NAVAL AIR DEVELOPMENT CENTER JOHNSVILLE PA AVIATION  
MEDICAL ACCELERATION LAB

THE EFFECT OF POSITIVE PRESSURE BREATHING ON ARTERIAL  
OXYGEN SATURATION AND PULMONARY VENTILATION IN  
SUBJECTS EXPOSED TO HIGH TRANSVERSE ACCELERATION, (U)

21P REED, JOHN H. ,JR.;

BURGESS, B. F. ,JR.; SANOLER, HAROLD ;

MONITOR: NAOC MA 6223

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (•PRESSURE BREATHING, OXYGEN  
CONSUMPTION), ACCELERATION TOLERANCE, ARTERIES,  
ELECTROCARDIOGRAPHY, PHYSIOLOGY, SPACE MEDICINE,  
RESPIRATION, STRESS (PHYSIOLOGY), ACCELERATION,  
CENTRIFUGES, MAN (U)

IDENTIFIERS: OXYGEN SATURATION, 1963 (U)

TWENTY-TWO CENTRIFUGE RUNS WERE PERFORMED ON EIGHT  
SUBJECTS IN WHOM ARTERIAL OXYGEN SATURATION WAS  
CONTINUALLY MONITORED, WHILE THE SUBJECTS WERE  
EXPOSED TO VARIOUS TRANSVERSE ACCELERATIONS +GX AT  
A SEAT ANGLE OF 6 DEGREES HEAD UP. THESE RUNS WERE  
MADE DURING CONDITIONS OF BREATHING: AIR, AIR  
POSITIVE PRESSURE, PURE OXYGEN, AND PURE OXYGEN  
POSITIVE PRESSURE. THE POSITIVE PRESSURE WAS  
METERED AUTOMATICALLY TO PROVIDE 3 MM HG PER G  
ABOVE AMBIENT PRESSURE. THE RESULTS OF THIS  
EXPERIMENT SHOW THAT THE SLOPE OF THE CURVE OF OXYGEN  
SATURATION PLOTTED AGAINST TIME FOR AIR AND AIR  
POSITIVE PRESSURE DECREASED APPROXIMATELY 3 PERCENT  
EVERY 10 SECONDS, BEGINNING 10 TO 20 SECONDS AFTER  
THE ONSET OF THE ACCELERATION. DURING THE OXYGEN  
BREATHING STUDIES, A LOWERING IN ARTERIAL OXYGEN  
SATURATION WAS OBSERVED APPROXIMATELY 100 SECONDS  
AFTER THE ONSET OF ACCELERATION. A METHOD IS  
SUGGESTED FOR ESTIMATING PHYSIOLOGICAL LIMITS FOR  
THEORETICAL PROFILES OF ACCELERATION G PLOTTED  
AGAINST TIME. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200529

AD-426 900

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO  
PHYSIOLOGICAL REACTIONS OF THE HUMAN ORGANISM DURING  
THE ACTION OF ACCELERATIONS, MAXIMUM IN TIME AND  
INTENSITY, DIRECTED ALONG THE SPINE BREAST AXIS, (U)

DEC 62 IIP BARER, A.A.; GOLOV, G.A.;

MONITOR: FTD TT63 1095

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. FROM BYULLETEN'  
EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY, NO. 7, PP.  
24-29, 1963.

DESCRIPTORS: (\*ACCELERATION TOLERANCE, MAN),  
(\*PHYSIOLOGY, ACCELERATION TOLERANCE), RESPI  
RATION, REACTION (PSYCHOLOGY), CARDIOVASCULAR  
SYSTEM, VISUAL ACUITY, ELECTROENCEPHALOGRAPHY,  
AVIATION MEDICINE. (U)

IDENTIFIERS: ELECTROMYOGRAPHY, 1963, LONGITU  
DINAL AXIS. (U)

TRANSLATION OF FOREIGN RESEARCH ON THE PHYSIOLOGICAL  
REACTIONS OF THE HUMAN ORGANISM DURING THE ACTION OF  
ACCELERATIONS, MAXIMUM IN TIME AND INTENSITY, DIRECTED ALONG  
THE SPINEBREAST AXIS.

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200929

AO-429 027

FROST ENGINEERING DEVELOPMENT CORP DENVER COLO  
HUMAN BODY DYNAMICS UNDER SHORT-TERM  
ACCELERATION.

(U)

64P

REPT. NO. 115 2

CONTRACT: N167 19747X

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*ACCELERATION TOLERANCE, MATHEMATICAL  
MODELS), MODELS (SIMULATIONS), THEORY DYNAMICS, MAN,  
EXPERIMENTAL DATA, POSTURE, ANALOG COMPUTERS,  
BIOPHYSICS

(U)

THIS REPORT REVIEWS THE DEVELOPMENT OF THE THEORY  
OF BODY DYNAMICS AND SHOWS HOW IT CAN BE USED TO  
OBTAIN SOLUTIONS TO IMPORTANT ENGINEERING PROBLEMS.  
(AUTHOR)

(U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200529

AD-430 032

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO  
THE EFFECT OF TRANSVERSE ACCELERATION ON OXYGEN  
TENSION IN BRAIN TISSUE, (U)

JAN 64 12P KOVALENKO, YE. A. IPOPKOV, V.  
L. ICHERNYAKOV, I. N. I  
MONITOR: FTD TT63 1215

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. FROM FIZIOLOGICHESKIY  
ZHURNAL SSSR IM. I. M. SECHENOVA, 49:10, PP. 1145-  
1149, 1963.

DESCRIPTORS: (\*ACCELERATION TOLERANCE, BRAIN),  
POSTURE, HYPOXIA, ELECTROENCEPHALOGRAPHY, DOGS,  
PHYSIOLOGY (U)

IDENTIFIERS: TRANSVERSE ACCELERATION, 1963 (U)

TRANSLATION OF FOREIGN RESEARCH ON THE EFFECT OF  
TRANSVERSE ACCELERATION ON OXYGEN TENSION IN BRAIN  
TISSUE.

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00529

AD-431 208

MAYO CLINIC ROCHESTER MINN

PHOTOELECTRIC EARPIECE RECORDINGS AND OTHER  
PHYSIOLOGIC VARIABLES AS OBJECTIVE METHODS OF  
MEASURING THE INCREASE IN TOLERANCE TO HEADWARD  
ACCELERATION (+GZ) PRODUCED BY PARTIAL IMMERSION IN  
WATER. (U)

DEC 63 19P WOOD, EARL H. I

LINDBERG, EVAN F. I COOE, CHARLES F. I BALDES, E.  
J. I

CONTRACT: AF33 616 7594

PROJ: 7222

MONITOR: AMRL

TOR63 106

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+ACCELERATION TOLERANCE, PHYSIOLOGY),  
(+MODELS (SIMULATIONS), ACCELERATION), UNDERWATER,  
INSTRUMENTATION, CENTRIFUGES, PHOTOELECTRIC MATERIALS,  
ELECTROCARDIOGRAPHY, POSTURE, VISION, PSYCHOMETRICS,  
CARDIOVASCULAR SYSTEM, ANALYSIS OF VARIANCE, EAR,  
BLOOD CIRCULATION, MAN, RECORDING SYSTEMS, AUDIOMETRY,  
REACTION (PSYCHOLOGY) (U)  
IDENTIFIERS: WATER IMMERSION, EARPIECE RECORDER,  
1963 (U)

THE PROTECTION AGAINST THE EFFECTS OF HEADWARD  
ACCELERATION AFFORDED THE HUMAN BY HIS IMMERSION IN  
WATER TO THE LEVEL OF THE XYPHOID AND TO THE THIRD  
RIB AT THE STERNUM HAS BEEN ASSAYED IN 15 TRAINED  
CENTRIFUGE SUBJECTS. VARIATIONS IN EAR OPACITY, EAR  
OPACITY PULSE, HEART RATE, RESPIRATION AND REACTION  
TIMES TO AUDITORY AND VISUAL STIMULI WERE RECORDED  
CONTINUOUSLY IN A SERIES OF 15 SUBJECTS DURING 15-  
SECOND EXPOSURES TO ACCELERATION WHILE SEATED IN A  
STEEL TUB MOUNTED IN THE COCKPIT OF THE MAYO  
CENTRIFUGE. NO SYSTEMATIC ALTERATIONS IN THE  
GENERAL PATTERN, CHARACTERIZED BY A PERIOD OF FAILURE  
DURING THE FIRST 5 TO 10 SECONDS FOLLOWED BY  
CARDIOVASCULAR COMPENSATION AND RECOVERY FROM VISUAL  
SYMPTOMS DURING THE LATTER PART OF THE EXPOSURE WERE  
OBSERVED DURING IMMERSION IN WATER. THE DECREMENTS  
IN EAR OPACITY ASSOCIATED WITH THE VARIOUS DEGREES OF  
VISUAL IMPAIRMENT WERE CLOSELY SIMILAR; HOWEVER, THE  
DECREMENTS IN EAR OPACITY PULSE AND INCREMENTS IN  
HEART RATE WERE SIGNIFICANTLY LESS DURING IMMERSION  
IN WATER THAN WHEN IN AIR. (AUTHOR) (U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00529

AO-438 489

NAVAL AIR DEVELOPMENT CENTER JOHNSVILLE PA AVIATION  
MEDICAL ACCELERATION LAB  
ELECTROENCEPHALOGRAPHIC CHANGES IN HUMAN SUBJECTS  
DURING BLACKOUT PRODUCED BY POSITIVE ACCELERATION. (U)  
APR 64 22P SQUIRES, RUSSELL D. ;  
JENSEN, R. E. ; SIPLE, W. C. ; GORDON, J. J. ;  
MONITOR: NADC MA , NAVMED 6402, , MR005 13 0002 2,  
R12

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+ELECTROENCEPHALOGRAPHY, BLACKOUT  
(PHYSIOLOGY)), (+ACCELERATION TOLERANCE,  
ELECTROENCEPHALOGRAPHY), ELECTRONIC EQUIPMENT, BRAIN,  
HYPOXIA, AVIATION MEDICINE, BLOOD PRESSURE,  
PERFORMANCE (HUMAN), BAND PASS FILTERS, FREQUENCY  
ANALYZERS (U)  
IDENTIFIERS: CONSCIOUSNESS (U)

EACH OF 12 HUMAN SUBJECTS WAS SUBJECTED ALTERNATELY  
TO A SET OF PEAK ACCELERATIONS OF 6 AND 7 G ON TWO  
SEPARATE OCCASIONS. PEAK G WAS ATTAINED IN  
APPROXIMATELY 30 SECONDS AFTER THE INITIATION OF A  
SYMMETRICAL, SINUSOIDAL ACCELERATION PROFILE. THE  
BEST INDEX OF THE LEVEL OF CONSCIOUSNESS APPEARS TO  
BE THE INVERSE RELATIONSHIP BETWEEN THE DEPTH OF  
BLACKOUT AND THE AMPLITUDE OF EEG FREQUENCIES IN  
THE RANGE OF 5 CPS. THE LOWER DELTA FREQUENCIES  
WERE NOT USED SINCE ARTIFACTS DUE TO ELECTRODE  
DISPLACEMENT RESULTING FROM HEAD MOVEMENT WERE SEEN  
MOST FREQUENTLY IN THIS RANGE OF FREQUENCIES.  
MOREOVER, THE 5 TO 7 CPS. FREQUENCY BAND IS  
ASSOCIATED WITH CEREBRAL HYPOXIA WHICH OCCURS DURING  
POSITIVE ACCELERATION. THIS FREQUENCY BAND WAS  
ALSO SHOWN TO BE RELATED TO PERFORMANCE OF SPECIFIC  
PERFORMANCE TASKS. (AUTHOR) (U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200529

AO-457 349

AEROMEICAL RESEARCH LAB (6571ST) HOLLOMAN AFB N MEX  
DYNAMIC RESPONSE ANALYSIS OF +GX IMPACT ON MAN, (U)

NOV 64 45P FEUER, H. C. ; ROOT, E. H. ;

REPT. NO. ARL TR64 11

PROJ: 7231

TASK: 723106

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*STRESS (PHYSIOLOGY), DECELERATION),  
(\*DECLARATION, MEASURING DEVICES (ELECTRICAL +  
ELECTRONIC)), REACTION (PSYCHOLOGY), BIOPHYSICS, TEST  
METHODS, TEST EQUIPMENT, ANATOMICAL MODELS, MODELS  
(SIMULATIONS), IMPACT SHOCK, ACCELEROMETERS, ANALOG  
SYSTEMS, ANALOG COMPUTERS, SPACE MEDICINE, HUMANS,  
THORAX (U)

AN ANALOG COMPUTER WAS USED TO COMPARE THE DYNAMIC  
RESPONSE OF AN ACCELEROMETER PLACED OVER THE STERNUM  
OF HUMAN TEST SUBJECTS DURING IMPACT IN +G SUB X  
DIRECTION WITH THE RESPONSE OF SECOND AND HIGHER  
ORDER SPRING-MASS SYSTEMS. IDENTITY OF THE  
RESPONSE MODES OF BOTH SYSTEMS, HUMAN AND MECHANICAL,  
WAS APPROXIMATED BY TRIAL AND ERROR MODIFICATION OF  
NATURAL FREQUENCY AND DAMPING COEFFICIENT OF THE  
COMPUTER MODEL USED. WITH RESTRICTION TO ONLY A  
FEW CASES INVESTIGATED AND TO THE PARTICULAR TEST  
CONDITIONS, BEST COMPLIANCE OF COMPLETE RESPONSE  
COVERAGE IS CONSIDERED TO RESULT FROM THE APPLICATION  
OF A SINGLE SPRING-MASS SYSTEM OF IRREGULARLY VARYING  
DAMPING COEFFICIENT. A PARAMETRIC ANALYSIS OF THE  
SINGLE SPRING-MASS SYSTEM IS PRESENTED TO AID THE USE  
OF STANDARDIZED IMPACT PROFILES. THE USEFULNESS OF  
THE METHOD OF RESPONSE APPROXIMATION HAS BEEN  
ESTABLISHED, BUT THE VALIDATION OF THE UNDERLYING  
CONCEPT OF RESPONSE PREDICTABILITY NEEDS FURTHER  
INVESTIGATION. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00529

AD-472 550

DOUGLAS AIRCRAFT CO INC SANTA MONICA CALIF MISSILE AND  
SPACE SYSTEMS DIV

BIO MEDICAL POTENTIAL OF A CENTRIFUGE IN AN ORBITING  
LABORATORY. (U)

DESCRIPTIVE NOTE: FINAL REPT. SEP 64-FEB 65,

JUL 65 122P WHITE, W. J. INYBERG, J. W.

WHITE, P. D. GRIMES, R. H. FINNEY, L. H. ;

REPT. NO. SM-48502

CONTRACT: AF04 695 679

MONITOR: SSD TDR-64-209-SUPPL.

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SUPPLEMENT TO REPT. NO. TDR-64-  
209.

DESCRIPTORS: (CENTRIFUGES, SPACE MEDICINE),  
SPACE STATIONS, ACCELERATION,  
STRESS (PHYSIOLOGY), WEIGHTLESSNESS, WEIGHT,  
HUMANS, GRAVITY, EXERCISE, CARDIOVASCULAR  
SYSTEM, SPACE ENVIRONMENTAL CONDITIONS,  
SIMULATION, SPACE CREWS, MAINTENANCE PERSONNEL,  
MANNED SPACECRAFT, ACCELERATION TOLERANCE (U)

FIVE STUDIES CONCERNING THE POTENTIAL OF A  
CENTRIFUGE IN AN ORBITAL LABORATORY WERE CONDUCTED.  
THE FIRST THREE STUDIES INCLUDE CONSEQUENCES OF  
HEART-TO-FOOT GRADIENTS ON TOLERANCE TO POSITIVE  
ACCELERATION; A PARAMETRIC STUDY OF THE POWER  
REQUIREMENTS OF A SHORT RADIUS CENTRIFUGE, AND A  
TECHNIQUE UTILIZING THE CENTRIFUGE FOR DETERMINING  
BODY MASS IN A NULL GRAVITY STATE. THE SALIENT  
GENERALIZATION FROM STUDIES IN WHICH BED REST WAS  
USED AS THE ANALOG OF NULL GRAVITY WERE PRESENTED.  
THE FOURTH STUDY WAS CONDUCTED TO STUDY THE  
INFLUENCE OF PERIODIC CENTRIFUGATION AS A METHOD OF  
ALLEVIATING PHYSIOLOGICAL DISTURBANCES, WITH EMPHASIS  
ON THE CARDIOVASCULAR SYSTEM, BROUGHT ABOUT BY 20  
DAYS OF BED REST. IT WAS SHOWN THAT MOTION  
SICKNESS IN THE SUBJECTS WAS NOT A PROBLEM WHEN  
EXPOSED TO HIGH ANGULAR RATES OF ROTATION.  
DEHYDRATION PRODUCED BY RECUMBENCY WAS ALLEVIATED  
BY PERIODIC CENTRIFUGATION, AND SUBJECTS EXPOSED TO  
+4GZ FOUR TIMES DAILY SHOWED LESS LABILITY OF  
BLOOD PRESSURE THAN DID THOSE RECEIVING LESS  
ACCELERATION. THE FIFTH STUDY EXTENDED THE RESULTS  
OF THE FOURTH STUDY BY INCREASING THE INTEGRATED G-  
TIME, ADDED APPROXIMATELY 700 KCAL OF EXERCISE, AND  
DISTRIBUTED THE RIDES OVER A 24-HR PERIOD AS  
CONTRASTED WITH THE 8-HR SCHEDULE OF THE PRIOR STUDY (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00529

AD-602 210

NAVAL SCHOOL OF AVIATION MEDICINE PENSACOLA FLA  
USE OF CALORIC TEST IN EVALUATING THE EFFECTS OF  
GRAVITY ON CUPULA DISPLACEMENT. (U)

DESCRIPTIVE NOTE: JOINT RESEARCH REPT.,

APR 64 16P MCLEOD, MICHAEL E. ;

CORREIA, MANNING J. ;

REPT. NO. NSAM-RR-94

CONTRACT: NASA ORDER-R-93

PROJ: MR-005-13-6001

TASK: 1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*ACCELERATION TOLERANCE, SEMICIRCULAR  
CANALS), (\*SEMICIRCULAR CANALS, ACCELERATION  
TOLERANCE), EAR, EYE, TEMPERATURE, STIMULATION,  
GRAVITY (ARTIFICIAL), THERMISTORS, CORNEA, RETINA,  
WATER, VELOCITY, LYMPH (U)

IDENTIFIERS: NYSTAGMUS (U)

SIXTEEN SUBJECTS WERE GIVEN CALORIC STIMULATION  
WHILE LYING IN PRONE AND SUPINE BODY POSITIONS. IT  
WAS FOUND THAT THE NYSTAGMIC RESPONSE IN THE SUPINE  
POSITION WAS SIGNIFICANTLY GREATER THAN THE RESPONSE  
IN THE PRONE POSITION. THESE FINDINGS CANNOT BE  
EXPLAINED ON THE BASIS OF A CUPULA-GRAVITY  
INTERACTION, ASSUMING THE CUPULA IS HEAVIER THAN THE  
SURROUNDING ENDOLYMPH. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY    SEARCH CONTROL NO. Z00529

AD-602 325

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO  
SPEED, ACCELERATION, WEIGHTLESSNESS: SOME PROBLEMS  
IN PHYSICS AND PHYSIOLOGY IN CONNECTION WITH  
ATMOSPHERIC AND SPACE FLIGHTS , (U)  
JUN 64 154P    ISAKOV, P. K. ISTASEVICH, R. S. ;  
MONITOR: FTD , TT    MT63 103, ,64 11861

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED MACHINE TRANS. OF MONO.  
SKOROSTI, USKORENIYA, NEVESOMOST' ; NEKOTORYE  
VOPROSY FIZIKI I FIZIOLOGII PRIMENITEL'NO K  
POLETAM V ATMOSFERE I KOSMICHESKOM PROSTRANSTVE,  
MOSCOW, 1962, 150P.

DESCRIPTORS: (\*SPACE FLIGHT, PHYSIOLOGY), VELOCITY,  
ACCELERATION, WEIGHTLESSNESS, VESTIBULAR APPARATUS,  
PHYSICAL FITNESS, ROCKETS, FUELS, SPACECRAFT,  
ASTRONAUTS, STIMULATION, REFLEXES, SPACE MEDICINE,  
BLOOD CIRCULATION, SHOCK (PATHOLOGY), USSR (U)

SPEED, ACCELERATION AND WEIGHTLESSNESS ARE  
CONSIDERED IN THE LIGHT OF NEW DATA. A SPECIAL  
CHAPTER IS DEVOTED TO THE QUESTION OF WEIGHTLESSNESS,  
IN WHICH THE PHYSICAL CONDITIONS ARISING FROM THIS  
PHENOMENON AND ITS INFLUENCE ON THE HUMAN ORGANISM  
AND ANIMALS UNDER SPACE-FLIGHT CONDITIONS ARE  
REPORTED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00529

AD-602 D12

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO  
COSMIC RESEARCH, 1964, VOL. 2, NO. 2.

(U)

JUL 64 232P

MONITOR: FTD ,TT

TT64 77D1 ,64 71143

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF  
KOSMICHESKIE ISSLEDOVANIYA (USSR) 1964, V. 2, NO. 2,  
P. 255-504.

DESCRIPTORS: (\*SPACE FLIGHT, SCIENTIFIC RESEARCH),  
(\*ASTROPHYSICS, SCIENTIFIC RESEARCH), SATELLITES  
(ARTIFICIAL), SPACE MEDICINE, SPACE PROPULSION, SPACE  
STATIONS, SPACECRAFT, INTEGRATION, DIFFERENTIAL  
EQUATIONS, MATHEMATICAL ANALYSIS, OPTICAL PROPERTIES,  
CLOUDS, METEOROLOGICAL SATELLITES, PERTURBATION  
THEORY, MAGNETIC FIELDS, INTERPLANETARY TRAJECTORIES,  
ORBITAL TRAJECTORIES, RADIOACTIVITY, HYPERSONIC FLOW,  
PRESSURE SUITS, USSR (U)

CONTENTS: INTERPLANETARY FLIGHTS WITH CONSTANT  
OUTPUT ENGINES, THE ACCELERATION OF A SPACECRAFT  
WITHIN THE RANGE OF PLANETARY INFLUENCE, ON SPACE-  
FLIGHT TRAJECTORIES WITH A CONSTANT REACTION  
ACCELERATION VECTOR, OPTIMUM TRAJECTORIES AND OPTIMUM  
PARAMETERS FOR SPACE VEHICLES, METHOD OF QUICKEST  
DESCENT AS APPLIED TO COMPUTATION OF INTERORBITAL  
TRAJECTORIES WITH ENGINES OF LIMITED POWER, RADIATIVE  
HEATING IN HYPERSONIC FLOW, OPTICAL PROPERTIES OF  
CLOUDS, EQUATION FOR RELEVANCE OF INFORMATION FROM  
WEATHER SATELLITES AND FORMULATION OF INVERSE  
PROBLEMS, ANALYTICAL REPRESENTATION OF THE EARTH'S  
MAGNETIC FIELD IN THE ORBITAL COORDINATE SYSTEM,  
GEOGRAPHICAL DISTRIBUTION OF RADIATION INTENSITY IN  
THE REGION OF THE BRAZILIAN MAGNETIC ANOMALY AT AN  
ALTITUDE OF ABOUT 300 KM, INVESTIGATION OF  
TERRESTRIAL RADIATION BELTS IN THE VICINITY OF THE  
BRAZILIAN MAGNETIC ANOMALY AT ALTITUDES OF 225-245  
KM, THE POSSIBILITIES OF REPLACING THE NITROGEN IN  
THE AIR WITH HELIUM IN SPACEVEHICLE CABINS AND THE  
EFFECTIVENESS OF USING A HELIUM-OXYGEN MIXTURE FOR  
VENTILATION OF A SPACE-PRESSURE SUIT. (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200529

AD-603 419

CIVIL AEROMEDICAL INST OKLAHOMA CITY OKLA  
TASK - CONTROL OF AROUSAL AND THE EFFECTS OF REPEATED  
UNIDIRECTIONAL ANGULAR ACCELERATION ON HUMAN  
VESTIGULAR RESPONSES, (U)

NOV 63 27P COLLINS, WILLIAM E. I  
MONITOR: CARI, 63 29

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (ACCELERATION TOLERANCE, VESTIGULAR  
APPARATUS), (VESTIGULAR APPARATUS, ACCELERATION  
TOLERANCE), ACCELERATION, VIBRATION, LEARNING,  
ADAPTATION (PHYSIOLOGY), HEARING, VISION, AUDITORY  
PERCEPTION, STIMULATION, SENSORY MECHANISMS, VISUAL  
PERCEPTION, SENSORY DEPRIVATION, MOTIVATION, AVIATION  
MEDICINE, DECELERATION (U)  
IDENTIFIERS: NYSTAGMUS (U)

SUBJECTS WERE EXPOSED TO A 10-DAY HABITUATION  
SERIES OF 200 CW ACCELERATIONS IN TOTAL DARKNESS  
WHILE PERFORMING ATTENTION-DEMANDING TASKS.  
DECELERATIONS WERE SUBTHRESHOLD. PRELIMINARY AND  
POST-TESTS INDICATED THAT SLOW-PHASE NYSTAGMUS AND  
DURATION OF THE OCULAR RESPONSE DECLINED  
BIDIRECTIONALLY AS A FUNCTION OF THE HABITUATION  
TRIALS, BUT FREQUENCY OF NYSTAGMUS INCREASED DURING  
THE STIMULUS PERIOD AND FOR A FEW SECONDS THEREAFTER.  
THESE CHANGES WERE APPROXIMATELY EQUAL FOR BOTH  
CW AND CCW STIMULATION. MEASUREMENTS OF  
SUBJECTIVE VELOCITY WERE OBTAINED DURING SEVERAL  
PRE AND POST-TRIALS BUT NEVER DURING THE HABITUATION  
SERIES. A DECLINE IN THE INTENSITY OF THE SENSATION  
TO CW ACCELERATION, BUT NOT TO CCW STIMULATION,  
WAS PRODUCED BY THE HABITUATION SERIES. A SECOND  
POST-TEST GIVEN AFTER ONE MONTH WITH NO INTERVENING  
STIMULATION SHOWED LITTLE OR NO RESTORATION OF  
NYSTAGMUS. HOWEVER, THE SUBJECTIVE REACTION  
DEMONSTRATED A CLEAR, ALBEIT INCOMPLETE PATTERN OF  
RECOVERY. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200929

AD-603 963

CORNELL AERONAUTICAL LAB INC BUFFALO N Y  
THE EFFECTS OF VIBRATION ON DIAL READING  
PERFORMANCE.

(U)

DESCRIPTIVE NOTE: REPT. FOR MAY 63-FEB 64,

JUL 64 28P TAUB, HARVEY A. I

REPT. NO. VH-1838-E-1

CONTRACT: AF33 657 11729

PROJ: 7231

TASK: 7231D1

MONITOR: AMRL , TDR64 7D

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*VIBRATION, VISUAL ACUITY),  
(\*ACCELERATION TOLERANCE, VISUAL ACUITY), (\*VISUAL  
ACUITY, VIBRATION), (\*HELMETS, ACCELERATION  
TOLERANCE), TOLERANCES (PHYSIOLOGY), PERFORMANCE  
TESTS, PERFORMANCE (HUMAN), SPACE MEDICINE, LAUNCHING,  
ATMOSPHERE ENTRY, STRESS (PHYSIOLOGY), SPACE  
ENVIRONMENTAL CONDITIONS, POSTURE, ASTRONAUTS,  
OSCILLATION, MANNED SPACECRAFT, MODELS (SIMULATIONS),  
AIR FORCE PERSONNEL, ANALYSIS OF VARIANCE (U)  
IDENTIFIERS: WHOLE-BODY SINUSOIDAL VIBRATIONS (U)

FOUR EXPERIMENTS WERE PERFORMED TO DETERMINE THE  
EFFECTS OF WHOLE-BODY SINUSOIDAL VIBRATIONS IN THE  
X, Y AND Z AXES UPON DIAL READING PERFORMANCE.  
THE SUBJECTS WERE IN THE SEMISUPINE POSITION SO  
THAT THE FORCE OF GRAVITY WAS DIRECTED THROUGH THE  
X AXIS OF THE BODY. IN ALL FOUR EXPERIMENTS,  
PERFORMANCE AT 6, 11 AND 15 CPS WAS COMPARED AT  
VARIOUS LEVELS OF ACCELERATION AND WITH AND WITHOUT  
THE USE OF A HELMET RESTRAINT. FURTHER,  
PERFORMANCE WAS ASSESSED WITH AN EASY AND A DIFFICULT  
DIAL READING TASK. THE RESULTS INDICATED THAT  
PERFORMANCE WITH THE EASY TASK WAS RELATIVELY  
UNAFFECTED BY THE VIBRATION CONDITIONS WHILE LARGE  
AND SIGNIFICANT LOSSES IN PERFORMANCE OCCURRED WITH  
THE DIFFICULT TASK. MEAN ERRORS FOR THE DIFFICULT  
DIAL READING TASK INCREASED SIGNIFICANTLY AS  
ACCELERATION LEVEL OF VIBRATION INCREASED. THE  
RESULTS FURTHER INDICATED THAT THE EFFECTS OF HELMET  
RESTRAINT AND FREQUENCY UPON PERFORMANCE WITH THE  
DIFFICULT READING TASK VARIED WITH THE DIRECTION OF  
VIBRATION. THAT IS, THE USE OF A PROTECTIVE DEVICE  
TO RESTRICT HELMET MOVEMENTS: (A) IMPROVED  
PERFORMANCE AT ALL FREQUENCIES WHEN VIBRATION WAS IN  
THE X AXIS; (B) IMPROVED PERFORMANCE AT 6 CPS,  
BUT DEGRADED PERFORMANCE AT 11 AND 15 CPS IN THE Y (U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00529

AO-607 878

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO  
CHANGES IN THE CONTENT OF BIOLOGICALLY ACTIVE  
SUBSTANCES IN RATS UNDER THE ACTION OF RADIAL  
ACCELERATIONS,

(U)

AUG 64 14P KHAZEN, I. M. IVAISFEL'D, I.

L. I

MONITOR: FTD ,TT TT64 2D21 ,64 71642

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF  
VOPROSY MEDITSINSKOI KHIMII (USSR) 1962, V. 8, NO.  
5, P. 492-497.

DESCRIPTORS: (\*ACCELERATION TOLERANCE, BIOCHEMISTRY),  
(\*BIOCHEMISTRY, ACCELERATION TOLERANCE), (\*HISTAMINE,  
ACCELERATION TOLERANCE), MEMBRANES (BIOLOGY),  
INTESTINES, LUNGS, BRAIN, TISSUES (BIOLOGY), URINE,  
MUCUS, PATHOLOGY, SEROTONIN, ACETYLCHOLINE,  
CHOLINESTERASE, CENTRAL NERVOUS SYSTEM, BLOOD  
ANALYSIS, MORPHOLOGY (BIOLOGY), USSR

(U)

IN RATS AFTER REPEATED ACTION OF POSITIVE RADIAL  
ACCELERATION, THE CONTENT OF HISTAMINE INCREASES IN  
THE MUCOUS MEMBRANE OF THE INTESTINE, AND DECREASES  
CONSIDERABLY IN THE LUNGS AND TISSUES OF THE BRAIN.  
IN THE TISSUES INVESTIGATED, THERE IS AN INCREASE  
IN THE ACTIVENESS OF THE DYNAMOXYDASE, AND ALSO IN  
THE ADRENALIN-LIKE SUBSTANCES, ESPECIALLY IN THE  
LUNGS AND THE BRAIN TISSUE. AFTER A SINGLE ACTION  
OF NEGATIVE ACCELERATIONS IN THE TISSUES  
INVESTIGATED, THERE IS A LOWERING OF THE CONTENT OF  
HISTAMINE AND THE ACTIVENESS OF THE DYNAMOXYDASE, THE  
CONTENT OF ADRENALIN-LIKE SUBSTANCES DECREASES IN THE  
MUCOUS MEMBRANE OF THE INTESTINE, AND IN THE TISSUES  
OF THE BRAIN, AND IN THE LUNGS NO CHANGE IS NOTED.  
AFTER MULTIPLE AND OFTEN REPEATED ACTION OF  
POSITIVE ACCELERATIONS IN THE INVESTIGATED TISSUE,  
THERE IS ALSO A LOWERING OF THE HISTAMINE AND CONTENT  
OF ADRENALIN-LIKE SUBSTANCES IN THE MUCOUS MEMBRANE  
OF THE INTESTINE AND IN THE TISSUES OF THE BRAIN.  
UNDER DIFFERENT CONDITIONS OF THE EXPERIMENT THERE  
IS A REDUCTION IN THE EXCRETION OF 5-OXYINDOLYL  
ACID WITH THE URINE, WHEREBY, THE CHANGE IN THE  
EXCRETION OF ACID ALSO OCCURS WITH A DEFINITE  
DEPENDENCE ON THE MAGNITUDE, THE FREQUENCY AND  
DURATION OF THE ACTION. (AUTHOR)

(U)

UNCLASSIFIED

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTRL NO. 200529

AD-608 570

NAVAL SCHOOL OF AVIATION MEDICINE PENSACOLA FLA  
THE EFFECT OF CHANGING THE RESULTANT LINEAR  
ACCELERATION RELATIVE TO THE SUBJECT ON NYSTAGMUS  
GENERATED BY ANGULAR ACCELERATION.

(U)

DESCRIPTIVE NOTE: REPT. NO. 99,

SEP 64 44P LANSBERG, MARTIN P. ;

GUEDRY, FRED E. , JR. ; GRAYBIEL, ASHTON ;

PROJ: MRO05 12 6001 , NASA ORDER NO. R93

TASK: 1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-608 571.

DESCRIPTORS: (+ACCELERATION TOLERANCE, SEMICIRCULAR  
CANALS), (+SEMICIRCULAR CANALS, ACCELERATION  
TOLERANCE), DECELERATION, ROTATION, STIMULATION, EYE,  
RECORDING SYSTEMS, SPACE MEDICINE

(U)

IDENTIFIERS: NYSTAGMUS, OTOLITH SYSTEM

(U)

THE EFFECT OF CENTRIPETAL ACCELERATION ON NYSTAGMUS  
WAS STUDIED BY PLACING MEN AT RADII OF 17 AND 20 FEET  
IN VARIOUS ORIENTATIONS RELATIVE TO THE CENTER OF  
ROTATION. ANGULAR ACCELERATIONS AND DECELERATIONS  
WERE APPROXIMATELY 10 DEG/SEC SQUARED. IN SOME OF  
THESE DIFFERENT POSITIONS, THE PLANES OF THE  
SEMICIRCULAR CANALS REMAINED UNCHANGED RELATIVE TO  
THE PLANE OF ROTATION, BUT THE ORIENTATION OF THE  
RESULTANT FORCE RELATIVE TO THE OTOLITH SYSTEM WAS  
CHANGED. IN SEVERAL SUCH SITUATIONS THE MAGNITUDE,  
PLANE, AND DIRECTION OF NYSTAGMUS WERE CHANGED BY  
CENTRIPETAL ACCELERATIONS BETWEEN 1 AND 2 G-UNITS.  
RESULTS ARE DISCUSSED IN TERMS OF OTOLITH  
MODULATION OF SENSORY INPUT FROM THE SEMICIRCULAR  
CANALS. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200529

AD-608 571

NAVAL SCHOOL OF AVIATION MEDICINE PENSACOLA FLA  
INFLUENCE OF LABYRINTH ORIENTATION RELATIVE TO  
GRAVITY ON RESPONSES ELICITED BY STIMULATION OF THE  
HORIZONTAL SEMICIRCULAR CANALS. (U)

DESCRIPTIVE NOTE: REPT. NO. 100,

SEP 64 10P CORREIA, MANNING J. ;

GUEDRY, FRED E. , JR. ;

PROJ: HRO05 12 6001 NASA , ORDER R93

TASK: 1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO: AD-608 570.

DESCRIPTORS: (+ACCELERATION TOLERANCE, SEMICIRCULAR  
CANALS), (+SEMICIRCULAR CANALS, ACCELERATION  
TOLERANCE), DECELERATION, ROTATION, STIMULATION, EYE,  
SPACE MEDICINE (U)

IDENTIFIERS: NYSTAGMUS, OTOLITH SYSTEM (U)

TWO EXPERIMENTS WERE CONDUCTED TO EXAMINE THE  
EFFECTS OF DIFFERENT ORIENTATIONS OF THE HORIZONTAL  
SEMICIRCULAR CANAL CUPULAE RELATIVE TO GRAVITY ON  
NYSTAGMIC OUTPUT FOLLOWING DECELERATION FROM  
ROTATION ABOUT THE EARTH-HORIZONTAL AXIS.  
DIFFERENCES IN NYSTAGMUS OUTPUT WITH DIFFERENT  
STOPPING POSITIONS WERE NOT ENTIRELY CONSISTENT WITH  
PREDICTIONS BASED ON THE ASSUMPTION THAT CUPULA  
DEFLECTION WAS INFLUENCED BY GRAVITY. A MORE  
PLAUSIBLE EXPLANATION, MODULATION OF CANAL-INITIATED  
RESPONSES BY OTOLITH ACTIVITY, WAS PRESENTED. A  
HIGH INCIDENCE OF MOTION SICKNESS WAS ENCOUNTERED  
WHILE ROTATING SUBJECTS ABOUT THE EARTH-HORIZONTAL  
AXIS AND IT WAS APPARENTLY CONTROLLED BY THE MENTAL  
TASK ASSIGNED TO THE SUBJECT. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200929

AD-610 192

BROWN ENGINEERING CO INC HUNTSVILLE ALA  
PHYSIO-MECHANICAL EFFECTS OF ACCELERATIONS ON HUMAN  
BEINGS WORKING IN A ROTATING ENVIRONMENT. (U)  
DESCRIPTIVE NOTE: TECHNICAL NOTE,  
NOV 64 28P CREWS, HARRY C. , JR. :  
REPT. NO. BROWNENG-R-63

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+ACCELERATION TOLERANCE, ADAPTATION  
(PHYSIOLOGY)), (+ROTATION, ADAPTATION (PHYSIOLOGY)),  
STRESS (PHYSIOLOGY), REACTION (PSYCHOLOGY), CONFINED  
ENVIRONMENTS, PERFORMANCE (HUMAN), THRESHOLDS  
(PHYSIOLOGY), VESTIBULAR APPARATUS, SEMICIRCULAR  
CANALS, PATHOLOGY, MATHEMATICAL ANALYSIS, MAINTENANCE  
PERSONNEL, RADAR EQUIPMENT (U)  
IDENTIFIERS: PHYSIO-MECHANICAL EFFECTS (U)

THE MECHANICAL FORCES ACTING UPON PERSONNEL AND  
EQUIPMENT IN A ROTATING ENVIRONMENT ARE DESCRIBED.  
THESE FORCES ARE USED TO EXPLAIN THE OBSERVED  
PHYSIOLOGICAL AND PSYCHOLOGICAL REACTIONS OF  
PERSONNEL. PROCEDURES AND PRACTICES ARE  
RECOMMENDED TO HOLD ADVERSE REACTIONS TO AN  
ACCEPTABLE MINIMUM. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200529

AO-611 946

TECHNOLOGY INC DAYTON OHIO

MECHANICAL IMPEOANCE AS A TOOL IN RESEARCH ON HUMAN  
RESPONSE TO ACCELERATION. (U)

DESCRIPTIVE NOTE: FINAL REPT. FOR JUL 62-MAY 64,

64 IOP WEIS, EDMUND B. , JR.;

CLARKE, NEVILLE P. ; BRINKLEY, JAMES W.;

MARTIN, PAUL J. ;

CONTRACT: AF33 657 10010

PROJ: 7221

TASK: 722101

MONITOR: AMRL , TR-65-7

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PUB. IN AEROSPACE MEDICINE (U. S.  
) V35 N10 P945-50 OCT 1964 (COPIES NOT AVAILABLE TO  
DOC OR CLEARINGHOUSE CUSTOMERS). PRESENTED AT THE  
AEROSPACE MEDICAL ASSOCIATION MEETING IN MIAMI,  
FLORIDA, MAY 12, 1964.

DESCRIPTORS: (\*HUMAN ENGINEERING, ACCELERATION  
TOLERANCE), (\*ACCELERATION TOLERANCE, HUMAN  
ENGINEERING), (\*AEROSPACE CRAFT, HUMAN ENGINEERING),  
AVIATION MEDICINE, SPACE MEDICINE, HUMANS, BIOPHYSICS,  
MATHEMATICAL MODELS (U)  
IDENTIFIERS: MECHANICAL IMPEOANCE (U)

THE PROBLEM OF DEVELOPING QUANTITATIVE STANDARDS  
AND DESIGN LIMITS FOR HUMAN EXPOSURES TO DYNAMIC  
ACCELERATION IS DISCUSSED. THE CONCEPT OF THE  
DEVELOPMENT OF A MECHANICAL IMPEOANCE MODEL OF THE  
HUMAN TO QUANTITATE ENERGY TRANSFER FROM THE  
ENVIRONMENT TO THE HUMAN IS REVIEWED. THE METHODS  
OF MEASUREMENT AND CALCULATION OF IMPEDANCE AS WELL  
AS SOME CURRENT RESULTS ARE DISCUSSED. THE  
UTILIZATION OF THE IMPEDANCE RESULTS IN THE PROCESS  
OF PROTECTION SYSTEM DEVELOPMENT IS PRESENTED AS A  
CRITERION FOR PERFORMANCE. THE MEANING OF THE  
IMPEDANCE RESULTS AND THEIR CORRELATION WITH  
TOLERANCE EXPERIMENTATION IS DISCUSSED. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00929

AD-612 957

AEROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB  
OHIO

A RESTRAINT SYSTEM FOR APPLICATION IN R SUBZ AND -  
G SUBX ACCELERATION ENVIRONMENTS WITH EMPHASIS UPON  
KNEE AND LOWER LEG RESTRAINTS. (U)

DESCRIPTIVE NOTE: FINAL REPT. FOR DEC 63-FEB 64,

DEC 64 15P VAN PATTEN, ROBERT E. I

REPT. NO. AMRL-TR-64-144

PROJ: 7222

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*ACCELERATION TOLERANCE, SAFETY  
HARNESS), (\*SAFETY HARNESS, ACCELERATION TOLERANCE),  
ASTRONAUTS, SAFETY DEVICES, GRAVITY (ARTIFICIAL), LEG,  
HEAD, BODY, YAW, DESIGN, HUMAN ENGINEERING (U)

THIS REPORT DESCRIBES THE DEVELOPMENT OF A LOWER  
LEG RESTRAINT SYSTEM DESIGN SUITABLE FOR USE IN YAW  
(R SUB Z) AND TRANSVERSE P-A G (-G SUB X)  
ACCELERATION ENVIRONMENTS. THE DESIGN IS BASED  
UPON THE PRINCIPLE OF AVOIDING RESTRAINING FORCE  
CONCENTRATIONS ALONG THE ANTERIOR CREST OF THE TIBIA  
AND HAS BEEN WORN WITH COMFORT FOR PERIODS OF UP TO  
THREE MINUTES WITH THE LEGS IN A 9.8 G FIELD.  
(AUTHOR) (U)

UNCLASSIFIED

OOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200529

AO-612 221

MAYO CLINIC ROCHESTER MINN

BLOOD OXYGEN CHANGES INDUCED BY FORWARD (+GX)

ACCELERATION.

(U)

DESCRIPTIVE NOTE: FINAL REPT. FOR 1 APR 62-1 NOV 64,

OEC 64 25P BANCHERO, NATALIO I

CRONIN, LUCILLE INOLAN, A. CLARK WOOD, EARL W.

I

CONTRACT: AF 33(697)-8899, NIH-H2922

PROJ: 7222

MONITOR: AMRL,

TR-64-122

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SUPPLEMENTARY NOTE: AVAILABLE COPY WILL NOT PERMIT FULLY  
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REQUESTED BY USERS OF OOC. COPY IS AVAILABLE FOR PUBLIC  
SALE. PREPARED IN COOPERATION WITH MAYO GRADUATE  
SCHOOL OF MEDICINE, ROCHESTER, MINN.

DESCRIPTORS: (+ACCELERATION TOLERANCE, BLOOD  
ANALYSIS), (+THORAX, ACCELERATION TOLERANCE), OXYGEN  
CONSUMPTION, RESPIRATION, BLOOD VOLUME, ARTERIES,  
VEINS, LUNGS, GRAVITY, ANESTHESIA, OOGS

(U)

SIX OOGS UNDER MORPHINE-PENTOBARBITAL ANESTHESIA  
WERE EXPOSED TO FORWARD ACCELERATIONS OF 2, 4 AND  
6G FOR ONE MINUTE AND 6G FOR THREE MINUTES WHILE  
IN THE HORIZONTAL, 15 DEGREES HEAD-UP AND 15 DEGREES  
HEAD-DOWN POSITIONS BREATHING ROOM AIR. EXPOSURES  
TO 6G WERE REPEATED BREATHING 99.6% OXYGEN.  
OXYGEN SATURATION AND OPACITY AT 800 MILLIMICRONS  
OF BLOOD WERE RECORDED CONTINUOUSLY BY CUVETTE  
OXIMETERS. PULMONARY ARTERIAL-VENOUS SHUNTING WAS  
ESTIMATED FROM BLOOD OXYGEN SATURATIONS. NO  
SYSTEMATIC CHANGES IN FEMORAL ARTERY OXYGEN  
SATURATION OCCURRED AT 2G WHILE A SMALL AVERAGE  
DECREASE WAS OBSERVED AT 4G (4%). DECREASES  
OCCURRED AT 6G AVERAGING 11 (9-17) PER CENT AT  
THE END OF THE 60-SECOND EXPOSURE. RETURN TO  
CONTROL (1G) VALUES WAS NEARLY COMPLETE 90  
SECONDS AFTER THE EXPOSURE. OXYGEN INHALATION  
DELAYED BUT DID NOT PREVENT THE DESATURATION.  
THESE DECREASES ARE BELIEVED DUE TO PULMONARY  
ARTERIAL-VENOUS SHUNTING. THE AVERAGE INCREASE IN  
PULMONARY ARTERIAL-VENOUS SHUNT OVER 1G VALUES  
ESTIMATED AT THE END OF 60-SECOND EXPOSURES TO 6G  
WHEN BREATHING AIR, WAS 17 (11-21) PER CENT.  
VALUES FOR SHUNTS AT 6G, WHEN BREATHING OXYGEN,  
WERE SIMILAR.

(U)

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ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200529

AO-612 541

MAYO CLINIC ROCHESTER MINN

END-EXPIRATORY PLEURAL PRESSURES IN DOGS IN SUPINE  
AND PRONE BODY POSITIONS STUDIED WITHOUT  
THORACOTOMY.

(U)

DESCRIPTIVE NOTE: FINAL REPT. FOR 15 JUL 63-1 NOV 64,  
DEC 64 JIP RUTISHAUSER, WILHELM J. ;

BANCHERO, NATALIO ; TSAKIRIS, ANASTASIO G. ;

STURM, RALPH E. ; WOOD, EARL H. ;

CONTRACT: AF33 657 8899

PROJ: 7222

MONITOR: AMRL , TR-64-133

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*ACCELERATION TOLERANCE, THORAX),  
(\*THORAX, ACCELERATION TOLERANCES), PRESSURE, POSTURE,  
CANNULATION, RECORDING SYSTEMS, RESPIRATION, HEART,  
LUNGS, WEIGHT, DOGS, MEASUREMENT (U)

INTRAPLEURAL PRESSURES WERE MEASURED SIMULTANEOUSLY  
BY SALINE-FILLED CATHETERS FROM 2 TO 5 DIFFERENT  
SITES IN THE POTENTIAL RIGHT PLEURAL SPACE OF NINE  
ANESTHETIZED DOGS WHILE THE ANIMALS WERE SUPPORTED IN  
THE SUPINE AND PRONE POSITIONS BY MEANS OF MOLOED  
HALF-BODY CASTS. INTRAPLEURAL TIPS OF THE  
CATHETERS WERE PLACED AT HEART LEVEL IN THE CEPHALO-  
CAUDAL DIMENSION AT VENTRAL (RETROSTERNAL) AND  
DORSAL (PARAVERTEBRAL) SITES IN THE THORAX.  
THE SITE OF EACH CATHETER TIP WAS MEASURED FROM  
BIPLANE X-RAYS TAKEN IN EACH POSITION. THE AVERAGE  
VERTICAL DISTANCE BETWEEN THE DORSAL AND VENTRAL  
CATHETER TIPS WAS 10.6 (S.E. OF MEAN = 0.3)  
CM. IN THE SUPINE POSITION, MEAN END-EXPIRATORY  
PRESSURE AT THE SUPERIOR (VENTRAL) CATHETER TIP  
WAS -11.9 (=0.7) CM. H<sub>2</sub>O AS COMPARED TO -5.0  
(=0.5) CM. H<sub>2</sub>O AT THE DEPENDENT (DORSAL)  
SITE GIVING AN AVERAGE GRADIENT OF 0.64 (=  
0.04) CM. H<sub>2</sub>O/CM. VERTICAL DISTANCE BETWEEN THE  
TWO RECORDING SITES. THE RESPECTIVE VALUES IN THE  
PRONE POSITION WERE: -9.0 (=0.6) CM. H<sub>2</sub>O  
SUPERIOR (DORSAL) SITE; +0.7 (=0.5) CM.  
H<sub>2</sub>O DEPENDENT (VENTRAL) SITE; GRADIENT:  
0.91 (=0.05) CM. H<sub>2</sub>O/CM. VERTICAL DISTANCE.  
THE SLIGHTLY POSITIVE VALUE FOR RETROSTERNAL  
PLEURAL PRESSURE AND THE GREATER DORSAL-VENTRAL  
GRADIENT, WHEN IN THE PRONE POSITION, MAY BE DUE TO  
THE WEIGHT OF THE HEART. DURING THE INCREASE IN  
WEIGHT INDUCED BY ACCELERATION, THESE PRESSURES WERE  
MULTIPLIED ROUGHLY IN PROPORTION TO THE G LEVEL AND (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00929

AO-615 374

SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX  
TOLERANCE TO TRANSVERSE (+GX) AND HEADWARD (+GZ)  
ACCELERATION AFTER PROLONGED BED REST, (U)  
63 4P MILLER, PERRY B. ;  
LEVERETT, SIONY O., JR. ;

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PUB. IN AEROSPACE MEDICINE V26 N1  
P12-5 JAN 1969 (COPIES NOT AVAILABLE TO DOC OR  
CLEARINGHOUSE CUSTOMERS).

DESCRIPTORS: (+ACCELERATION TOLERANCE, ASTRONAUTS),  
(+RELAXATION (PHYSIOLOGY), ACCELERATION TOLERANCE),  
REFLEXES, HEART, PULSE RATE, VISION, PATHOLOGY,  
ELECTROCARDIOGRAPHY, SPACE MEDICINE, SPACE FLIGHT,  
ATMOSPHERE ENTRY, SIMULATION (U)  
IDENTIFIERS: BED REST (U)

TOLERANCE TO THE TRANSVERSE (+GX) ACCELERATION  
OF A SIMULATED GEMINI RE-ENTRY PROFILE WAS  
DETERMINED BEFORE AND AFTER 4 WEEKS OF ABSOLUTE BED  
REST. TOLERANCE TO HEADWARD (+GZ) ACCELERATION  
WAS STUDIED BEFORE AND AFTER 4 WEEKS OF ABSOLUTE BED  
REST AND 2 WEEKS OF MODIFIED BED REST. AS JUDGED  
BY THE DEGREE OF PHYSICAL DISCOMFORT, THE ABILITY TO  
RESPOND TO A CENTRAL LIGHT, OR THE PRESENCE OF  
ELECTROCARDIOGRAPHIC ABNORMALITIES, TOLERANCE TO +  
GX WAS UNAFFECTED BY 4 WEEKS OF ABSOLUTE BED REST.  
IN EACH SUBJECT STUDIED, HEART RATES DURING PEAK  
ACCELERATION WERE HIGHER AFTER BED REST THAN BEFORE.  
AS JUDGED BY THE LEVEL OF ACCELERATION AT WHICH  
CENTRAL VISION WAS LOST, NO SIGNIFICANT CHANGE IN  
TOLERANCE TO HEADWARD (+GZ) ACCELERATION OF RAPID  
ONSET WAS OBSERVED AFTER 2 WEEKS OF MODIFIED BED REST  
OR AFTER 4 WEEKS OF ABSOLUTE BED REST. AFTER EACH  
TYPE OF BED REST, THE MAJORITY OF THE SUBJECTS HAD  
DECREASED TOLERANCE TO HEADWARD (+GZ)  
ACCELERATION OF GRADUAL ONSET, BUT THE MEAN DECREASE  
WAS NOT STATISTICALLY SIGNIFICANT. MEAN HEART  
RATES AT EQUIVALENT LEVELS OF +GZ WERE  
SIGNIFICANTLY HIGHER AFTER BOTH PERIODS OF BED RESTS.  
THE ONLY ARRHYTHMIA OF CLINICAL IMPORTANCE NOTED  
WAS THE APPEARANCE OF BURSTS OF PREMATURE ATRIAL  
CONTRACTIONS DURING G.O.R. + GZ IN 1 SUBJECT AFTER  
2 WEEKS OF BED REST. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTRL NO. Z00529

AD-615 570

AEROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB  
OHIO

A SUMMARY OF HUMAN TOLERANCE TO PROLONGED  
ACCELERATION.

(U)

DESCRIPTIVE NOTE: FINAL REPT. FOR JAN 63-JAN 65,  
FEB 65 42P HYDE, ALVIN S. IRAAB, HAROLD

W. I

REPT. NO. AMRL TR-65-26

PROJ: 7222

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (ACCELERATION TOLERANCE, HUMANS), DATA,  
TABLES, GRAPHICS, STRESS (PHYSIOLOGY),  
COUNTERMEASURES, TIME

(U)

HUMAN SUBJECT TOLERANCE TO ACCELERATIONS OF GREATER  
THAN ONE SECOND DURATION IS SUMMARIZED FOR THE  
ORTHOGONAL X, Y, AND Z AXES. BECAUSE EACH  
INVESTIGATOR AT EACH LABORATORY UTILIZES DIFFERENT  
RESTRAINT SYSTEMS, BODY POSITIONS, AMBIENT  
TEMPERATURES, ETC, AND MOST IMPORTANT, UTILIZES  
DIFFERENT CRITERIA OF 'TOLERANCE,' THE DATA ARE  
REFERENCED AND PRESENTED IN TABLES AND GRAPHS FOR  
EACH MAJOR CATEGORY (DIRECTION) OF ACCELERATION.  
THE POINTS PRESENTED IN THE GRAPHS AND TABLES ARE  
USUALLY THE HIGHEST VALUES ACHIEVED; IN EACH SERIES  
THERE WERE SUBJECTS WHO COULD NOT TOLERATE THE GIVEN  
DIRECTION, AMPLITUDE, AND DURATION. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200529

AD-617 011

AEROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB  
OHIO

MAN'S SHORT-TIME TOLERANCE TO SINUSOIDAL  
VIBRATION.

(U)

DESCRIPTIVE NOTE: FINAL REPT. FOR JAN 61-JAN 64,  
65 10P TEMPLE, WILLIAM E. ;

CLARKE, NEVILLE P. ; BRINKLEY, JAMES W. ;

MANOEL, MORRIS J. ;

REPT. NO. TR-65-96

PROJ: 7231

TASK: 723101

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PUB. IN AEROSPACE MEDICINE V35 N10  
P923-30 OCT 1964. (COPIES NOT AVAILABLE TO DDC OR  
CLEARINGHOUSE CUSTOMERS).

DESCRIPTORS: (\*ACCELERATION TOLERANCE,  
ASTRONAUTS), (\*TOLERANCES (PHYSIOLOGY),  
VIBRATION), SAFETY HARNESS, MANNED SPACECRAFT,  
STRESS (PHYSIOLOGY), EXPOSURE, SPACE MEDICINE,  
TABLES

(U)

MAN'S VOLUNTARY, SUBJECTIVE, SHORT-TIME TOLERANCE  
LIMITS TO SINUSOIDAL VIBRATIONS AT FREQUENCIES  
BETWEEN 2 AND 20 CPS IN THE THREE ORTHOGONAL AXES  
HAVE BEEN DETERMINED. THE GENERAL SHAPE OF A  
SERIES OF CURVES DEPICTING TOLERABLE LEVELS OF  
VIBRATION ACCELERATION AS A FUNCTION OF FREQUENCY HAS  
BEEN DEFINED. TWO DIFFERENT SUPPORT AND RESTRAINT  
SYSTEMS HAVE BEEN EMPLOYED AND THE INFLUENCE OF THE  
SYSTEM USED ON THE TOLERANCE LIMITS REACHED HAS BEEN  
DISCUSSED. REASONS FOR THE OBSERVED DIFFERENCES  
HAVE BEEN ANALYZED. IT HAS BEEN FOUND THAT THE  
MAGNITUDE OF ACCELERATION TOLERATED AT EACH FREQUENCY  
AND, TO SOME EXTENT, THE TYPE OF SYMPTOM ARE  
INFLUENCED BY BOTH THE EXPERIMENTAL DESIGN AND THE  
SUPPORT AND RESTRAINT SYSTEM USED. FURTHERMORE,  
THE TYPE OF SYMPTOM OCCURRING APPEARS TO BE SOMEWHAT  
DEPENDENT UPON THE ACCELERATION LEVEL REACHED.  
EMPHASIS IS GIVEN TO THE FACT THAT, FOR MANNEO  
SPACE VEHICLES, HIGH AMPLITUDES OF VIBRATION IN THE 1  
TO 20 CPS FREQUENCY RANGE ARE TO BE AVOIDED IF  
POSSIBLE. IF THIS IS NOT POSSIBLE, THE RESULTS  
SUGGEST THAT FUTURE DESIGN CONSIDERATIONS INCLUDE  
PROVISION FOR CLOSE COUPLING OF BODY AND HEAD (WITH  
HELMET AND LINEAR) TO THE SUPPORT SYSTEM TO IMPROVE  
TOLERANCE TO THE FREQUENCIES BELOW 10 CPS. BETWEEN  
10 AND 20 CPS, METHODS OF ISOLATING THE BODY AND  
PARTICULARLY THE HEAD FROM VIBRATION INPUT OF HIGH (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00529

AD-617 752

NAVAL SCHOOL OF AVIATION MEDICINE PENSACOLA FLA  
CHANGES IN SPONTANEOUS ACTIVITY AS A MEASURE OF  
SENSITIVITY TO ROTATION IN THE WHITE RAT, (U)

JAN 65 12P ESKIN, ARNOLO RICCIO, DAVID

C. I

REPT. NO. NSAM-913

PROJ: MR005 13 6001

TASK: 1

MONITOR: NAVMEO , MR005.13-6001.1-103

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: JOINT REPT. WITH NATIONAL  
AERONAUTICS AND SPACE ADMINISTRATION, WASHINGTON,  
D. C.

DESCRIPTORS: (•ROTATION, SENSITIVITY),  
(•ACCELERATION TOLERANCE, RATS), BEHAVIOR,  
MOTION, VESTIBULAR APPARATUS, STIMULATION,  
PSYCHOPHYSIOLOGY, AVIATION MEDICINE,  
STRESS(PHYSIOLOGY) (U)

FIFTY-SIX UNRESTRAINED RATS WERE INDIVIDUALLY  
EXPOSED TO A ROTATION SPEED BETWEEN 0-18 RPM.  
THEIR ACTIVITY WAS MEASURED USING A FOURPOINT  
SCALE: (0) NO ACTIVITY, (1) GROOMING AND  
SNIFFING, (2) MODERATE RUNNING, AND (3) RAPID  
RUNNING. AMOUNT OF ACTIVITY DECREASED AS A FUNCTION  
OF ROTATION SPEED FROM 6 TO 14 RPM, WHERE IT  
REACHED A LOWER LIMIT PLATEAU. RATE OF DECLINE  
WITHIN THIS SPEED RANGE WAS ALSO DIRECTLY RELATED TO  
VELOCITY. POSTROTATION ACTIVITY WAS SUPPRESSED UP  
TO FIVE MINUTES. THE RATS SHOWED CONSIDERABLE  
SENSITIVITY TO CORIOLIS STIMULI GENERATED DURING  
CONSTANT SPEED OF ROTATION. A RELATIONSHIP WAS  
FOUND BETWEEN DURATION AND MAGNITUDE OF STIMULATION.  
THESE FINDINGS ARE ENCOURAGING FOR THE USE OF  
BEHAVIORAL METHODS IN STUDYING SENSITIVITY TO MOTION.  
(AUTHOR) (U)

UNCLASSIFIED

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY    SEARCH CONTROL NO. Z00529

AO-618 280

FROST ENGINEERING DEVELOPMENT CORP DENVER COLO

A REVIEW OF RESTRAINT SYSTEMS TEST METHODS. (U)

DESCRIPTIVE NOTE: FINAL REPT. FOR OCT 62-AUG 63.

SEP 63    12P    STECH, ERNEST L. ;

CONTRACT: AF33 657 9514

PROJ: 6301

TASK: 630102

MONITOR: AMRL ,

TR-65-109

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PUB. IN AMERICAN SOCIETY OF MECHANICAL ENGINEERS, JOURNAL AS PAPER NUMBER 63-WA-279 P1-9 1963 (COPIES NOT AVAILABLE TO DOC OR CLEARINGHOUSE CUSTOMERS). PREPARED FOR PRESENTATION AT THE WINTER ANNUAL MEETING, PHILADELPHIA, PA., NOVEMBER 17-22, 1963, OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS.

DESCRIPTORS: (ACCELERATION TOLERANCE, SAFETY HARNESS), (SAFETY HARNESS, ACCELERATION TOLERANCE), REVIEWS, STRESS (PHYSIOLOGY), ANTHROPOMETRY, DAMPING, VIBRATION, FREQUENCY, RESONANCE, ACCELEROMETERS, MATHEMATICAL MODELS, ANATOMICAL MODELS, TOLERANCES (PHYSIOLOGY), MECHANICAL PROPERTIES, TEST METHODS, ANIMALS, HUMANS (U)

RESTRAINT TEST METHODS ARE REVIEWED WITH REFERENCE TO A MATHEMATICAL MODEL OF THE DYNAMICS OF THE HUMAN BODY. THIS APPROACH IS SUGGESTED SO THAT THE MECHANICAL CHARACTERISTICS OF RESTRAINT SYSTEMS CAN BE EVALUATED IN TERMS OF THEIR INFLUENCE ON THE DYNAMIC RESPONSE OF THE HUMAN BODY IN ANY ACCELERATION ENVIRONMENT. ANTHROPOMORPHIC DUMMIES, ANIMALS, LIVE HUMANS AND HUMAN CADAVERS ARE DISCUSSED WITH RESPECT TO THEIR ADVANTAGES AND DISADVANTAGES IN RESTRAINT SYSTEM TESTS. THE CONCEPTS OF INJURY RISK, SUBJECT VARIABILITY, AND DYNAMIC AND ANATOMICAL DIFFERENCES BETWEEN ANIMAL AND HUMAN SUBJECTS ARE CONSIDERED. THE AVAILABLE METHODS FOR RESTRAINT TESTS ARE DISCUSSED IN TERMS OF THE AMOUNT AND KIND OF INFORMATION GENERATED AND A TEST TECHNIQUE IS RECOMMENDED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00529

AD-618 416

AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF  
ENGINEERING

EXPERIMENTAL DETERMINATION OF HUMAN VESTIBULAR SYSTEM  
RESPONSE THROUGH MEASUREMENT OF EYEBALL  
COUNTERROLL. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,

65 10P HARTZLER, VICTOR L. ;

ROCCAFORTE, PHILIP A. ;

REPT. NO. GE/EE/65-11

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+ACCELERATION TOLERANCE, VESTIBULAR  
APPARATUS), (+VESTIBULAR APPARATUS, ACCELERATION  
TOLERANCE), EYE, MOTION, ROTATION, VISION,  
PERFORMANCE(HUMAN), STRESS(PHYSIOLOGY),  
SEMICIRCULAR CANALS, MATHEMATICAL MODELS, FOURIER  
ANALYSIS, GRAPHICS, TABLES (U)  
IDENTIFIERS: EYE COUNTERROLLING, NYSTAGMUS (U)

AN INDIRECT MEASUREMENT OF THE HUMAN VESTIBULAR  
SYSTEM RESPONSE WAS OBTAINED THROUGH THE MEASUREMENT  
OF EYEBALL COUNTERROLL. HUMAN SUBJECTS WERE  
ROTATED ABOUT AN AXIS THROUGH THEIR LINE OF SIGHT AT  
ANGULAR VELOCITIES VARYING FROM 0-30 RPM. THE  
RIGHT EYE WAS PHOTOGRAPHED AND THE ANGLE OF EYEBALL  
COUNTERROLL WAS DETERMINED BY AN OPTICAL CORRELATION  
PROCESS. A MATHEMATICAL MODEL WAS FORMULATED USING  
FOURIER CURVE FITTING TECHNIQUES. THIS MODEL  
INDICATED THAT SUBJECTS WITH NORMAL VESTIBULAR  
FUNCTION DEMONSTRATE AN EYEBALL COUNTERROLL WHICH IS  
A FUNCTION OF ANGULAR VELOCITY AND POSITION WITH  
RESPECT TO THE VERTICAL. SUBJECTS WITH KNOWN  
VESTIBULAR DEFECTS DEMONSTRATED A SMALL COUNTERROLL.  
(AUTHOR) (U)

UNCLASSIFIED

OOC REPORT BIBLIOGRAPHY    SEARCH CONTROL NO. 200529

AO-620 273

NAVAL SCHOOL OF AVIATION MEDICINE PENSACOLA FLA  
THE EFFECT OF HIGH ACCELERATION FORCES UPON CERTAIN  
PHYSIOLOGICAL FACTORS OF HUMAN SUBJECTS PLACED IN A  
MODIFIED SUPINE POSITION: SOC PROJECT 9-U-37A;  
POSITION 3,

(U)

OCT 49    28P    STAUFFER, FLOYD R. ;  
PROJ: NM001 010  
MONITOR: NAVMED ,    NM-001-010-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (ACCELERATION TOLERANCE, POSTURE),  
STRESS (PHYSIOLOGY), RESPIRATION, PAIN,  
CARDIOVASCULAR SYSTEM, AVIATION MEDICINE

(U)

SIX MALE SUBJECTS WERE EXPOSED TO ACCELERATION FORCES UP TO 12 G RESULTANT FOR 5-8 SECONDS ON THE HUMAN CENTRIFUGE. DURING THESE EXPOSURES THEY WERE IN A MODIFIED SUPINE POSITION IN WHICH THE BENT KNEES PLACED THE FEET AT A LEVEL SOMEWHAT BELOW THAT OF THE REST OF THE BODY. DURING ROTATION OF THE CENTRIFUGE THE SEAT PIVOTED SO THAT THE RESULTANT G FORCE WAS SUPPLIED TO THE SUBJECT IN A DIRECTION FROM CHEST TO BACK. CONSCIOUSNESS, VISION, AND VOLUNTARY FINGER MOVEMENTS AT THE HIGHEST G OBTAINABLE ON THIS CENTRIFUGE WERE NOT IMPAIRED UNDER THESE CONDITIONS. HUMAN TOLERANCE TO G FORCE UNDER THESE CONDITIONS SEEMED TO BE RESTRICTED BY RESPIRATION AND PAIN. EAR OPACITY AND EAR PULSE WERE RELATIVELY POOR INDICATORS OF THE CARDIOVASCULAR CHANGES TAKING PLACE UNDER THESE CONDITIONS. THE CARDIOVASCULAR SYSTEM, ACCORDING TO THE HEART RATE AND ELECTROCARDIOGRAM, DID NOT SHOW SEVERE ENOUGH CHANGES TO CONSIDER IT AS ONE OF THE IMPORTANT FACTORS OF HUMAN TOLERANCE TO G FORCE UNDER THESE CONDITIONS. THE PRACTICALITY OF THIS POSITION FOR AIRCRAFT PERSONNEL WERE DISCUSSED. (AUTHOR)

(U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200529

AO-620 298

NAVAL SCHOOL OF AVIATION MEDICINE PENSACOLA FLA  
HIGH ACCELERATIONS IN INTERMEDIATE TRAINING;  
INCIDENCE OF SYMPTOMS AND AN ESTIMATE OF TOLERANCE TO  
'G'. (U)

OEC 45 7P

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*ACCELERATION TOLERANCE,  
BLACKOUT(PHYSIOLOGY)),  
(\*BLACKOUT(PHYSIOLOGY), AVIATION PERSONNEL),  
STRESS(PHYSIOLOGY), GRAVITY, INSTRUCTORS,  
STUDENTS, TRAINING, DIVE BOMBING, GUNNERY  
TRAINERS, AVIATION MEDICINE (U)

THE INCIDENCE OF OBVIOUS SYMPTOMS DUE TO HIGH  
ACCELERATIONS IN INSTRUCTORS AND STUDENTS WAS  
ESTIMATED BY MEANS OF A QUESTIONNAIRE. ROUGHLY  
ONE-HALF HAD EXPERIENCED GREYOUT OR BLACK-OUT, AND  
ONE-EIGHTH BLACKED OUT FREQUENTLY. IN A PRIMARY  
SQUADRON THERE WAS LESS BLACK-OUT EXPERIENCED BY  
STUDENTS THAN AT A SQUADRON TRAINING IN DIVE BOMBING  
AND GUNNERY, WHERE ONE-QUARTER BLACKED OUT  
FREQUENTLY. FIFTEEN OF 16 PRIMARY INSTRUCTORS  
ADMITTED BLACKING OUT, ALMOST ONE HALF FREQUENTLY.  
FROM WHAT IS KNOWN OF THE G'S PRODUCED BY THE  
MANEUVERS RESPONSIBLE FOR BLACK-OUT, THE TOLERANCE  
FOR G OF ALL OF THESE INDIVIDUALS WAS LESS THAN + 4  
G, AND MOST OF THEM CERTAINLY LESS THAN + 5 G,  
APPLIED FOR NOT MORE THAN 4 SECONDS. THERE WAS  
CONSIDERABLE IGNORANCE SHOWN AS TO THE CAUSES OF  
BLACK-OUT AND METHODS OF ITS PREVENTION. ABOUT  
HALF THE SUBJECTS DID NOT KNOW HOW THEIR TOLERANCE  
TO G COULD BE ALTERED. (AUTHOR) (U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZOD529

AD-620 319

TECHNOLOGY INC DAYTON OHIO APPLIED SCIENCES DIV  
DISTORTION ANALYSIS OF THE ACCELERATION PRODUCED BY  
THE WESTERN GEAR CORPORATION MODEL 4010 HIGH  
AMPLITUDE VIBRATION MACHINE. (U)

DESCRIPTIVE NOTE: FINAL REPT. FOR JUN-SEP 64,  
APR 65 37P PRIMIANO, FRANK P. , JR. ;  
LOWRY, RICHARD D. ; CLARKE, NEVILLE P. ;

CONTRACT: AF33 615 1894

PROJ: 7231

TASK: 7231D1

MONITOR: AMRL , TR-65-27

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (•VIBRATORS(MECHANICAL), FLIGHT  
SIMULATORS), (•FLIGHT SIMULATORS,  
VIBRATORS(MECHANICAL)), (•STRESS(PHYSIOLOGY),  
FLIGHT SIMULATORS), AVIATION MEDICINE, SPACE  
MEDICINE, ACCELERATION TOLERANCE, TEST EQUIPMENT,  
VIBRATION, EXTREMELY LOW FREQUENCY, WAVE  
ANALYZERS, HUMAN ENGINEERING (U)

THE ACCELERATION ENVIRONMENT PRODUCED BY THE  
WESTERN GEAR MODEL 4010 HIGH AMPLITUDE  
VIBRATION MACHINE WAS SURVEYED AT EVEN  
FUNDAMENTAL FREQUENCIES FROM 2 TO 20 CPS AT TWO  
LEVELS OF ACCELERATION, 1 G AND 2 G. THE  
FREQUENCY COMPONENTS OF THE MOTION UP TO 50 CPS WERE  
DETERMINED BY A M-H 9090 AUTOMATIC WAVE  
ANALYZER AND ARE PRESENTED IN THE FORM OF HARMONIC  
DISTRIBUTIONS FOR EACH FUNDAMENTAL. THE 'TOTAL  
DISTORTION FIGURE' AND 'OVERALL DISTORTION FIGURE'  
ARE USED AS MEASURES OF THE FIDELITY WITH WHICH THE  
ACCELERATION WAVE APPROXIMATES A PURE SINE WAVE OF  
THE FUNDAMENTAL FREQUENCY. THE DATA DICTATED THAT  
THE 1 G ACCELERATION WAS MORE DISTORTED THAN THE 2  
G AND THAT AT BOTH LEVELS THE DISTORTION INCREASED  
WITH FREQUENCY. (AUTHOR) (U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00929

AD-622 026

AEROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB  
OHIO

COMPRESSION FRACTURES OF THORACIC VERTEBRAE  
APPARENTLY RESULTING FROM EXPERIMENTAL IMPACT, A CASE  
REPORT. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. FOR JAN-APR  
64,

AUG 65 15P HENZEL, JOHN H. :

CLARKE, NEVILLE P. ; MOHR, GEORGE C. :

WEIS, EOUNO B. , JR. :

REPT. NO. AMRL-TR-65-134

PROJ: 7231

TASK: 723106

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*EJECTION, FRACTURES(BONE)),  
(\*FRACTURES(BONE), SPINAL COLUMN), (\*SPINAL  
COLUMN, ACCELERATION TOLERANCE), THORAX,  
ACCELERATION, EJECTION SEATS, IMPACT SHOCK,  
TOLERANCES(PHYSIOLOGY), WOUNDS + INJURIES,  
SPACE MEDICINE, STRESS(PHYSIOLOGY) (U)

THE OCCURRENCE OF COMPRESSION DEFORMITIES OF THE  
FOURTH AND FIFTH THORACIC VERTEBRAE IN A HUMAN TEST  
SUBJECT (OCL) EXPOSED IN LABORATORY EXPERIMENTS TO  
AN IMPACT ACCELERATION PROFILE SIMILAR TO THAT  
PRODUCED BY EJECTION SEAT ROCKETS IS REPORTED.  
THIS INJURY WAS PRESUMED TO BE THE RESULT OF AN  
IMPACT PROFILE HAVING A PEAK ACCELERATION OF 18.8G,  
A RATE OF ONSET OF 420G PER SECOND AND A BASELINE  
DURATION OF APPROXIMATELY 100 MILLISECOND. THE  
SUBJECT'S LONG AXIS WAS INCLINED BACKWARD 34 DEGREES  
FROM THE VERTICAL FORCE VECTOR. THE DIAGNOSIS WAS  
ESTABLISHED UPON THE SUBJECT'S TERMINATION OF  
HAZARDOUS DUTY AND SEPARATION FROM THE SERVICE,  
APPROXIMATELY ONE YEAR AFTER THE PRESUMPTIVE DATA OF  
INJURY. THIS DOCUMENTED INJURY REPRESENTS A  
DEMONSTRABLE ENDPOINT IN IMPACT TOLERANCE OF A  
SUBJECT EXPOSED TO AN ACCELERATION ENVIRONMENT WHICH  
CAN BE SPECIFICALLY DESCRIBED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00529

AD-624 487 6/2 6/19 22/2  
FROST ENGINEERING DEVELOPMENT CORP DENVER COLO  
PERSONNEL RESTRAINT AND SUPPORT SYSTEM DYNAMICS. (U)  
DESCRIPTIVE NOTE: FINAL REPT. JUL 62-DEC 63,  
OCT 65 112P PAYNE, PETER R. ;  
CONTRACT: AF33(657)-9514  
PROJ: AF-6201  
TASK: 620102  
MONITOR: AMRL , TR-65-127

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (ACCELERATION TOLERANCE, SAFETY  
HARNESS), (SAFETY HARNESS, OPTIMIZATION),  
STRESS (PHYSIOLOGY), HUMANS, MATHEMATICAL  
MODELS, BIOPHYSICS, AEROSPACE CRAFT,  
ANTHROPOMETRY, DYNAMICS, VIBRATION, DAMPING,  
BOD., MECHANICAL PROPERTIES (U)

LIKE ANY OTHER COMPLEX DYNAMIC SYSTEM THE HUMAN  
BODY RESPONDS IN A COMPLEX WAY TO ACCELERATION INPUTS  
WHICH VARY RAPIDLY WITH TIME. THE NEED TO AVOID  
STRESSES LARGE ENOUGH TO CAUSE INJURY TO THE BODY  
USUALLY IMPOSES LIMITS ON THE PERMISSIBLE INPUT  
ACCELERATION. THE RESTRAINT SYSTEM INTERPOSED  
BETWEEN A VEHICLE AND ITS OCCUPANT CAN MODIFY THE  
PHYSIOLOGICAL EFFECTS OF A VEHICLE'S ACCELERATION -  
TIME HISTORY. THIS MODIFICATION SHOULD BE MADE AS  
FAVORABLE AS POSSIBLE BY MINIMIZING THE STRESSES  
GENERATED IN THE VEHICLE'S OCCUPANT. TO DETERMINE  
OPTIMUM DYNAMIC CHARACTERISTICS FOR THE RESTRAINT  
SYSTEM, ITS IMPORTANT CHARACTERISTICS, AND THOSE OF  
THE HUMAN BODY, NEED TO BE REPRESENTED IN TERMS OF A  
MATHEMATICAL OR 'DYNAMIC' MODEL. THROUGH SUITABLE  
ANALYSIS, EITHER MATHEMATICAL OR BY MEANS OF A  
COMPUTER, THOSE DYNAMIC CHARACTERISTICS OF THE  
RESTRAINT SYSTEM CAN BE DETERMINED WHICH WILL  
MINIMIZE THE PEAK STRESSES DEVELOPED IN ITS HUMAN  
OCCUPANT. A GENERAL THEORY OF SUITABLE DYNAMIC  
MODELS IS DEVELOPED FOR THIS TYPE OF PROBLEM.  
CLOSED FORM SOLUTIONS FOR A NUMBER OF SIMPLE CASES  
ARE PRESENTED. IN ADDITION A METHOD IS SHOWN WHICH  
PERMITS DEVELOPMENT OF SIMPLE DYNAMIC MODELS FOR THE  
HUMAN BODY UTILIZING EXISTING EXPERIMENTAL DATA.  
(AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00529

AD-624 546 14/2 6/19 13/12  
SOUTHWEST RESEARCH INST SAN ANTONIO TEX DEPT OF STRUCTURAL  
RESEARCH  
A STUDY OF THE USAF SCHOOL OF AEROSPACE MEDICINE  
HUMAN CENTRIFUGE. (U)  
DESCRIPTIVE NOTE: FINAL REPT., PHASE 1,  
OCT 65 35P EGGLESTON, L. A. ; JOHNSTON, R.  
K. ; PRYOR, A. J. ;  
CONTRACT: AF41(609)-2715  
PROJ: SWRI 03-1787

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*ACCELERATION TOLERANCE, LABORATORY  
EQUIPMENT), (\*CENTRIFUGES, ACCELERATION  
TOLERANCE), (\*FIRE SAFETY, CENTRIFUGES),  
HYDRAULIC EQUIPMENT, HYDRAULIC FLUIDS, HAZARDS,  
FIRE ALARM SYSTEMS, FIRE EXTINGUISHERS, FOAMS,  
SPACE MEDICINE (U)

A STUDY WAS MADE OF THE FIRE HAZARDS PECULIAR TO  
THE EQUIPMENT AND OPERATION OF THE USAF SCHOOL OF  
AEROSPACE MEDICINE HUMAN CENTRIFUGE AT  
BROOKS AIR FORCE BASE, SAN ANTONIO,  
TEXAS. THIS STUDY WAS BASED ON PRESENT AIR  
FORCE STANDARDS. NO MAJOR HAZARDS WERE FOUND,  
HOWEVER, RECOMMENDATIONS ARE PRESENTED WHICH PROVIDE  
MORE IN-DEPTH PROTECTION FOR THE CENTRIFUGE AS IT NOW  
EXISTS. THE MAJOR RECOMMENDATION IS THE  
INSTALLATION OF A FIRE-FOG DELUGE SYSTEM (WITH  
ALARM) IN THE PUMP ROOM AND SUB-PIT WHERE THE  
STORAGE OF COMBUSTIBLES IS NECESSARY. (AUTHOR) (U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200529

AD-624 626 6/19

AEROMEDICAL RESEARCH LAB (6371ST) HOLLoman AFB N MEX  
MAXIMUM VOLUNTARY VENTILATION AFTER + G SUB X IMPACT  
IN HUMANS. (U)

DESCRIPTIVE NOTE: INTERIM REPT. FOR FEB 65,  
NOV 65 18P HANSON, PETER G. ;  
REPT. NO. TR-65-22

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+ACCELERATION TOLERANCE,  
RESPIRATION), (+RESPIRATION,  
STRESS(PHYSIOLOGY)), LUNGS, BLOOD  
CIRCULATION, PATHOLOGY, HUMANS, ANXIETY,  
STRESS(PSYCHOLOGY) (U)

EIGHTEEN VOLUNTEER MALE SUBJECTS WERE EXPOSED TO 20  
+ G SUB X IMPACT ON THE DAISY DECELERATOR.  
MEASUREMENTS OF MAXIMUM VOLUNTARY VENTILATION  
(MVV) OBTAINED 10 MINUTES PRIOR TO, IMMEDIATELY  
AFTER AND 20 MINUTES AFTER IMPACT WERE COMPARED WITH  
PREVIOUSLY DETERMINED BASELINE MVV VALUES. THE  
RESULTS INDICATE THAT MVV PERFORMANCE IS ELEVATED  
IMMEDIATELY AFTER IMPACT. IT IS SUGGESTED THAT  
THIS RESPONSE IS RELATED TO SUBJECT ANXIETY WITH  
ACCOMPANYING SYMPATHICOTONIA. (AUTHOR) (U)

UNCLASSIFIED

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200529

AD-625 254 6/19  
NAVAL AIR DEVELOPMENT CENTER JOHNSVILLE PA AEROSPACE  
MEDICAL RESEARCH DEPT  
CINERADIOGRAPHIC OBSERVATIONS OF HUMAN SUBJECTS  
DURING TRANSVERSE ACCELERATIONS OF +5GX AND +  
10GX. (U)  
DESCRIPTIVE NOTE: FINAL REPT.,  
OCT 65 17P SANDLER, HAROLD ;  
REPT. NO. NADC-MR-6501

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+HEART, ACCELERATION TOLERANCE),  
(+ACCELERATION TOLERANCE, HEART), X-RAY  
PHOTOGRAPHY MOTION PICTURES, THORAX,  
STRESS(PHYSIOLOGY), HUMANS, RADIOGRAPHY (U)

X-RAY MOTION PICTURES WERE RECORDED FOR FIVE HUMAN  
SUBJECTS DURING TRANSVERSE ACCELERATIONS OF +5GX  
AND +10GX ON THE JOHNSVILLE CENTRIFUGE.  
QUANTITATIVE MEASUREMENTS OF CHANGE IN A-P  
CHEST DIAMETER AND HEART POSITION WERE MADE FROM  
PHOTOGRAPHIC PRINTS OF THE FILMS. A SLIGHT BUT  
SIGNIFICANT POSTERIOR DISPLACEMENT OF HEART POSITION  
COULD BE DEMONSTRATED WHEN COMPARED TO CHANGE IN THE  
A-P CHEST DIAMETER. (AUTHOR) (U)

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ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200529

AO-627 43C 12/12 14/2  
SOUTHWEST RESEARCH INST SAN ANTONIO TEX DEPT OF STRUCTURAL  
RESEARCH  
SUMMARY OF COST AND TIME REQUIRED FOR MODIFICATIONS  
AND CONVERSIONS ON THE USAF SCHOOL OF AEROSPACE  
MEDICINE HUMAN CENTRIFUGE AND ROTATIONAL FLIGHT  
SIMULATOR. (U)  
DESCRIPTIVE NOTE: FINAL REPT., PHASE 3,  
DEC 65 16P PRYOR, A. J. EGGLESTON, L. A.  
JOHNSTON, R. K. :  
CONTRACT: AF41(609)-2715  
PROJ: SWRI-03-1787

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*FLIGHT SIMULATORS, HYDRAULIC  
FLUIDS), (\*CENTRIFUGES, HYDRAULIC FLUIDS),  
(\*HYDRAULIC FLUIDS, FIRE SAFETY), MILITARY  
REQUIREMENTS, HAZARDS, TIME STUDIES, COSTS,  
SPACE MEDICINE, MECHANICAL DRAWINGS (U)

A STUDY WAS MADE OF THE FIRE HAZARDS PECULIAR TO  
THE EQUIPMENT AND OPERATION OF THE USAF SCHOOL OF  
AEROSPACE MEDICINE HUMAN CENTRIFUGE AND  
ROTATIONAL FLIGHT SIMULATOR AT BROOKS AIR  
FORCE BASE, TEXAS. THE STUDY WAS BASED ON  
PRESENT AIR FORCE STANDARDS AND RECOMMENDATIONS WERE  
OUTLINED IN PREVIOUS REPORTS WHERE HAZARDS EXCEEDED  
ACCEPTABLE LIMITS. THE REPORT CONTAINS COST AND  
TIME ESTIMATES FOR THE ACCOMPLISHMENT OF THE  
RECOMMENDATIONS REFERRED TO ABOVE. (AUTHOR) (U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00529

AO-630 788 6/19  
AEROMEDICAL RESEARCH LAB (6571ST) HOLLOMAN AFB N MEX  
AN INVESTIGATION OF THE RELATIONSHIP BETWEEN  
EXPERIENCE PARAMETERS AND SUBJECT ACCELERATION  
RESPONSE IN EXPERIMENTAL IMPACT. (U)  
DESCRIPTIVE NOTE: REPT. FOR FEB 65,  
MAR 66 24P FOSTER, PETER J  
REPT. NO. 6571-ARL-TR-66-8,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*ACCELERATION TOLERANCE, HUMANS),  
IMPACT SHOCK, EXPOSURE, ELECTROCARDIOGRAPHY,  
BLOOD PRESSURE, RESPIRATION, STATISTICAL  
ANALYSIS, TABLES, SPACE MEDICINE (U)  
IDENTIFIERS: EXPERIENCE (U)

STUDIES OF HUMAN TEST SUBJECTS UNDERGOING SUSTAINED  
ACCELERATION ON THE CENTRIFUGE HAVE SHOWN THAT  
TOLERANCE INCREASES WITH EXPERIENCE. THIS FACT  
SUGGESTED THE NEED FOR AN INVESTIGATION TO DETERMINE  
IF A SIMILAR RELATIONSHIP EXISTED BETWEEN CERTAIN  
IMPACT EXPERIENCE PARAMETERS AND SUBJECT ACCELERATION  
RESPONSE, WHICH WAS USED AS AN INDICATOR OF SUBJECT  
TOLERANCE TO IMPACT EXPOSURE. A NUMBER OF HUMAN  
TEST SUBJECTS HAVING VARYING DEGREES OF EXPERIENCE  
WITH EXPERIMENTAL IMPACT ACCELERATION WERE EXPOSED TO  
IDENTICAL IMPACT PROFILES. CORRELATIONS OF  
EXPERIENCE FACTORS TO INDICATED TOLERANCE SHOWED NO  
SIGNIFICANT RELATIONSHIP. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200529

AD-430 991 6/15  
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO  
HISTOMORPHOLOGICAL CHANGES IN THE INTERNAL EAR OF  
DOGS UNDER THE EFFECT OF RADIAL ACCELERATIONS, (U)  
MAR 66 12P MARKARYAN, S. S. ; KOGAN, R. E.

REPT. NO. FTD-TT-65-1356,  
MONITOR: TT , 66-60995

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF  
VESTNIK OTO-RINO LARINGOLOGII (USSR) V26 N2 P17-21  
1964.

DESCRIPTORS: (\*ACCELERATION TOLERANCE, EAR),  
(\*EAR, HEMORRHAGE), ACCELERATION, GRAVITY,  
BLOOD CIRCULATION, LYMPH, HISTOLOGY,  
MORPHOLOGY(BIOLOGY), TISSUES(BIOLOGY), (U)  
OTORHINOLARYNGOLOGY, REVIEWS, DOGS, USSR

TWELVE DOGS WERE SUBJECTED TO THE ACTION OF  
ACCELERATIONS WITHIN THE LIMITS OF 2.4 - 14.5G, THE  
TIME RANGING FROM 4 TO 20 MINUTES. IN THE INTERNAL  
EAR OF DOGS, THE VENOUS CIRCULATION BECAME DISTURBED,  
THIS RESULTING IN PROTRACTED HEMORRHAGES IN THE  
PERILYMPHATIC SPACES OF THE COCHLEA AND SUBEPITHELIAL  
CONNECTIVE TISSUE OF SACC AND AMPULES. HEMORRHAGES  
IN THE INTERNAL EAR RESOLVED MUCH SLOWER THAN  
HEMORRHAGES OCCURRING IN THE MIDDLE EAR OR IN THE (U)  
INTERNAL ACOUSTIC MEATUS. (AUTHOR)

UNCLASSIFIED

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200529

AD-632 681 6/19  
KAROLINSKA INSTITUTET STOCKHOLM (SWEDEN) LABS OF AVIATION  
AND NAVAL MEDICINE  
BLOOD GAS CHANGES IN THE ANESTHETIZED DOG DURING  
PROLONGED EXPOSURE TO POSITIVE RADIAL ACCELERATION, (U)  
OEC 58 14P BARR, P. -O. ; BJURSTEDT, H. ;  
COLERIDGE, J. C. G. ;  
CONTRACT: AF 61(052)-153,

UNCLASSIFIED REPORT  
AVAILABILITY: PUBLISHED IN ACTA PHYSIOLOGICA  
SCANDINAVICA V47 N1 P16-27 1959.  
SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*ACCELERATION TOLERANCE,  
RESPIRATION), GASES, BLOOD ANALYSIS,  
GRAVITY (ARTIFICIAL), STRESS (PHYSIOLOGY),  
OXYGEN, CARBON DIOXIDE, ACID-BASE EQUILIBRIUM,  
PH, HYPERVENTILATION, LUNGS, HEART, DOGS,  
SWEDEN (U)

IDENTIFIERS: HYPOCAPNIA, HYPOXEMIA (U)

ANESTHETIZED DOGS WERE EXPOSED TO INCREASED  
GRAVITATIONAL STRESS IN THE HEAD-TO-TAIL DIRECTION  
AND ARTERIAL O2 SATURATION AND ACID-BASE BALANCE  
CHANGES STUDIED. SIMULTANEOUS, DIRECT AND  
CONTINUOUS RECORDINGS WERE MADE OF ARTERIAL O2  
SATURATION AND PH AS WELL AS RESPIRATORY MINUTE  
VOLUME IN CENTRIFUGE RUNS. APPLICATION OF MODERATE  
G FORCES OVER SEVERAL MINUTES PRODUCED SEVERE  
HYPOXEMIA ALTHOUGH 100% O2 WAS BREATHEO AND  
HYPERVENTILATION WAS PRESENT, INDICATING A GREAT  
ALVEOLAR-ARTERIAL O2 DIFFERENCE, AND ACCORDINGLY, A  
LARGE INTRAPULMONARY SHUNT. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00529

AO-632 817 6/19

NAVAL AIR DEVELOPMENT CENTER JOHNSVILLE PA AEROSPACE  
MEDICAL RESEARCH DEPT  
HUMAN BIOCHEMICAL PARAMETERS OF ACCELERATIVE  
STRESS. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
APR 66 20P YORK, ELIHU I  
REPT. NO. NAOC-MR-6603,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+ACCELERATION TOLERANCE,  
BIOCHEMISTRY), (+ACCELERATION,  
STRESS(PHYSIOLOGY)), PHOSPHOLIPIDS, BLOOD,  
GLUCOSE, BLOOD CHEMISTRY,  
BLACKOUT(PHYSIOLOGY), EPINEPHRINE,  
METABOLISM, HUMANS (U)

IDENTIFIERS: GREYOUT(PHYSIOLOGY) (U)

ACCELERATION STRESS CONDITIONS WERE IMPOSED ON FOUR  
HEALTHY SUBJECTS RIDING THE HUMAN CENTRIFUGE.  
BLOOD BIOCHEMICAL ANALYSES WERE PERFORMED ON ALL  
SUBJECTS, WITH THE DEMONSTRATION OF AN INCREASE IN  
BLOOD GLUCOSE FOLLOWING CENTRIFUGATION IN THREE OF  
THE FOUR SUBJECTS, TWO OF WHOM DEVELOPED 'BLACKOUT'.  
ALL FOUR SUBJECTS DEVELOPED 'GREYOUT', THE  
CHANGES IN BLOOD SUGAR MAY SUGGEST A RELATIONSHIP  
BETWEEN EPINEPHRINE SECRETION AND GRAVITATIONAL  
ACCELERATION STRESS RESULTING IN PHYSIOLOGICAL  
CHANGES IN THE SUBJECT. CHANGES IN POOLED PLASMA  
PHOSPHOLIPID FRACTIONS WERE DEMONSTRATED IN BLOOD  
SAMPLES OBTAINED BEFORE AND FOLLOWING ACCELERATION;  
THESE CHANGES SUGGEST THAT ACCELERATION MAY INTERFERE  
WITH INTRACELLULAR ENERGY TRANSFER MECHANISMS  
INVOLVING PHOSPHORYLATED COMPOUNDS ASSOCIATED WITH  
OXIDATIVE METABOLISM. THE PRELIMINARY RESULTS OF  
THE PILOT PROJECT INDICATE THAT FURTHER BIOCHEMICAL  
MEASUREMENTS MAY BE DESIRABLE IN ASSESSING  
ACCELERATION TOLERANCE IN MAN. (AUTHOR) (U)

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ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200929

AO-633 473 6/19  
NAVAL AIR DEVELOPMENT CENTER JOHNSVILLE PA AEROSPACE  
MEDICAL RESEARCH DEPT  
DISTRIBUTION OF PULMONARY BLOOD FLOW AS AFFECTED BY  
TRANSVERSE (+GX) ACCELERATION. (U)  
DESCRIPTIVE NOTE: FINAL REPT.,  
DEC 65 32P HOPPIN JR, FREDERIC G. ;  
YORK, ELIHU ; KUHL, DAVID E. ; HYOE, RICHARD W. ;

REPT. NO. NAOC-MR-6517,  
CONTRACT: AT(30-1)-2175, PHS-C-4456  
MONITOR: NAVMED, NYO MR005.13-0002.18-2 , 2175-20

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+LUNGS, +ACCELERATION TOLERANCE),  
(+BLOOD CIRCULATION, ACCELERATION TOLERANCE),  
HYDROSTATIC PRESSURE, RADIOACTIVE ISOTOPES,  
BLOOD VESSELS, STRESS (PHYSIOLOGY) (U)

THE DISTRIBUTION OF BLOOD FLOW IN THE PULMONARY  
VASCULAR BED UNDER +GX (FORWARD OR TRANSVERSE  
ACCELERATION) WAS STUDIED BY THE INTRAVENOUS  
INJECTION OF RADIOACTIVE 131 IODINATED-MACRO  
AGGREGATED ALBUMIN (131I-MAA) IN THREE NORMAL  
SUBJECTS WHILE THEY WERE UNDER +1GX, +4GX AND  
+8GX ON A HUMAN CENTRIFUGE. THE RESULTING  
DISTRIBUTION OF RADIOACTIVITY IN THE LUNGS,  
REPRESENTING THE DISTRIBUTION OF PULMONARY BLOOD FLOW  
AT THE TIME OF INJECTION, WAS ASSESSED ONE TO THREE  
HOURS LATER BY LATERAL RADIOISOTOPE SCANNING. THE  
DISTRIBUTION OF PULMONARY BLOOD FLOW WAS NOT MARKEDLY  
DIFFERENT AT +1GX, +4GX, AND +8GX DESPITE  
A HYDROSTATIC GRADIENT IN PULMONARY INTRAVASCULAR  
PRESSURES ESTIMATED TO BE 88 MM HG UNDER +8GX.  
THESE FINDINGS INDICATE THAT UNDER +GX (FORWARD  
OR TRANSVERSE ACCELERATION) UNLIKE +GZ  
(HEADWARD OR POSITIVE ACCELERATION) THE  
DISTRIBUTION OF PULMONARY BLOOD FLOW IS NOT MARKEDLY  
DISTORTED, AND THAT THE REGIONAL FLOW OF BLOOD IN THE  
LUNG MAY NOT BE SIGNIFICANTLY CHANGED BY HIGH  
INTRAVASCULAR PRESSURES. (AUTHOR) (U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00929

AD-633 705 6/19  
ARMY MEDICAL RESEARCH LAB FORT KNOX KY  
ACQUISITION AND RETENTION OF NYSTAGMIC HABITUATION IN  
CATS WITH DISTRIBUTED ACCELERATION EXPERIENCE, (U)  
FEB 65 9P BROWN, JAMES H. ;  
REPT. NO. USAMRL-657,  
PROJ: OA-3A014901B71P,  
TASK: 08,

UNCLASSIFIED REPORT

AVAILABILITY: PUBLISHED IN JOURNAL OF COMPARATIVE  
AND PHYSIOLOGICAL PSYCHOLOGY V60 N3 P340-3 1965.  
SUPPLEMENTARY NOTE:

DESCRIPTORS: (•NYSTAGMUS, •ACCELERATION  
TOLERANCE), VESTIBULAR APPARATUS, AVIATION (U)  
MEDICINE, CATS (U)  
IDENTIFIERS: HABITUATION

FIFTY CATS WERE EXPOSED TO A LONG SERIES OF ANGULAR  
ACCELERATIONS DURING WHICH EXPERIMENTAL SESSIONS WERE  
DISTRIBUTED FROM 1 TO 14 DAYS. A HIGHLY  
SIGNIFICANT NYSTAGMUS RESPONSE DECLINE  
(HABITUATION) RESULTED FROM THIS REPEATED  
EXPOSURE TO ANGULAR ACCELERATION. WHILE THE  
ACQUISITION OF NYSTAGMIC HABITUATION WAS NOT  
INFLUENCED BY DIFFERENT DISTRIBUTIONS OF ACCELERATION  
EXPERIENCE, RETENTION WAS SYSTEMATICALLY AFFECTED.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200529

AD-624 080 6/19  
AEROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB  
OHIO  
CARDIOVASCULAR EFFECTS OF ROTATION IN THE Z  
AXIS, (U)  
66 7P URSCHEL, CHARLES W. ; HOOD  
JR, WILLIAM B. ;  
REPT. NO. AMRL-TR-65-56,  
PROJ: AF-7222,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*ACCELERATION TOLERANCE,  
\*CARDIOVASCULAR SYSTEM), (\*ROTATION,  
STRESS(PHYSIOLOGY)), ARTERIES, VEINS,  
CANNULATION, BLOOD PRESSURE, BLOOD VOLUME,  
TOLERANCES(PHYSIOLOGY) (U)

ROTATION OF THE SEATED SUBJECT ABOUT THE Z AXIS  
(RZ) RESULTS IN A RADIAL ACCELERATION GRADIENT  
IMPEDING VENOUS RETURN THEREBY REPRESENTING A  
CARDIOVASCULAR STRESS. THE CARDIOVASCULAR RESPONSES  
OF VOLUNTEER SUBJECTS INSTRUMENTED WITH INOWELLING  
ARTERIAL AND VENOUS CATHETERS WERE MEASURED DURING  
FOUR ROTATIONAL PROFILES COMBINING TWO RATES OF  
ANGULAR ACCELERATION (0.1 AND 0.8 RADIANS PER  
SECOND PER SECOND) AND TWO ROTATIONAL SPEEDS (60  
AND 120 RPM). THERE WAS A THREE-MINUTE PLATEAU AT  
PEAK VELOCITY. CENTRIPETAL ACCELERATION AT HAND/  
FOOT RADIUS (0.5 METERS) WAS 1.8 AND 7.4G AT 60  
AND 120 RPM, RESPECTIVELY. ROTATION AT 60 RPM  
REPRESENTED NO SIGNIFICANT STRESS. THREE MINUTE  
120 RPM RUNS HOWEVER CAUSED PROGRESSIVE  
TACHYCARDIA, NARROWING OF PULSE PRESSURE, AND A DROP  
IN MEAN ARTERIAL PRESSURE, THUS INFERENTIALLY A DROP  
IN CARDIAC OUTPUT. TOLERANCE WOULD THUS BE  
EXPECTED TO BE LIMITED BY THE ABILITY OF THE  
CIRCULATION TO MAINTAIN VENOUS RETURN. (AUTHOR) (U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200929

AD-634 519 6/19  
NAVAL AIR DEVELOPMENT CENTER JOHNSVILLE PA AEROSPACE  
MEDICAL RESEARCH DEPT  
CATECHOL AMINE MEASUREMENTS ASSOCIATED WITH  
AUTONOMIC-LABYRINTHINE RESPONSES IN MAN EXPOSED TO  
POSITIVE (+GZ) ACCELERATION. (U)  
DESCRIPTIVE NOTE: FINAL REPT.,  
APR 66 18P YORK, ELIHU ;BROWN, KENNETH  
R. ;GOLOFIEN, AALAN ;  
REPT. NO. NAOC-MR-6602,  
MONITOR: NAVMEO MR005.13-0002.19-2

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+ACCELERATION TOLERANCE, +AMINES),  
(+EPINEPHRINE, EXCRETION), MOTION SICKNESS,  
VESTIBULAR APPARATUS, STRESS(PHYSIOLOGY),  
BLOOD PLASMA, URINE, MEASUREMENT (U)  
IDENTIFIERS: CATECHOLAMINES (U)

FIVE NORMAL SUBJECTS AND TWO LABYRINTHINE-DEFECTIVE  
SUBJECTS WERE EXPOSED TO ACCELERATION PROFILES  
CONSISTING OF LINEAR, ANGULAR AND COMBINED (LINEAR  
PLUS ANGULAR) STRESS. CATECHOL AMINES WERE  
MEASURED IN PLASMA AND URINE FOR BOTH GROUPS. A  
DEMONSTRATED RISE IN PLASMA NOR-EPINEPHRINE OCCURRED  
IN TWO OF THE FIVE NORMAL SUBJECTS, BOTH OF WHOM  
DEVELOPED MOTION SICKNESS FOLLOWING A 'COMBINED'  
ACCELERATION STRESS. THE NORMAL GROUP HAD  
MEASURABLE PLASMA EPINEPHRINE LEVELS, UNDER MOST  
CIRCUMSTANCES, WHEREAS THE LABYRINTHINE DEFECTIVE  
GROUP HAD NONE. ALTHOUGH THERE IS INSUFFICIENT  
DATA TO MAKE A CLEAR-CUT SEPARATION BETWEEN DIFFERENT  
TYPES OF ACCELERATION STRESS IN THE TWO GROUPS, AND  
THEIR ASSOCIATED BIOCHEMICAL RESPONSES; NEVERTHELESS,  
THERE IS SOME EVIDENCE TO SUGGEST THAT THE INTACT  
LABYRINTH IS A FACTOR INFLUENCING ELABORATION OF  
CATECHOL AMINES, WHICH IN TURN MAY BE IMPLICATED IN  
THE DEVELOPMENT OF MOTION SICKNESS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200529

AD-624 609 6/19  
NAVAL AEROSPACE MEDICAL INST PENSACOLA FLA  
BIOCHEMICAL CHANGES OCCURRING WITH ADAPTATION TO  
ACCELERATIVE FORCES DURING ROTATION, (U)  
APR 66 15P COLEHOUR, JAMES K. ;  
GRAYBIEL, ASHTON ;  
REPT. NO. NAMI-959,  
CONTRACT: NASA ORDER-R-93,  
MONITOR: NAVMED HRO05.13-0004.2.3

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (•MOTION SICKNESS, BIOCHEMISTRY),  
(•ADAPTATION(PHYSIOLOGY), BIOCHEMISTRY),  
(•ACCELERATION TOLERANCE, BIOCHEMISTRY),  
ROTATION, STRESS(PHYSIOLOGY), EXCRETION,  
CORTICOSTEROID AGENTS, EOSINOPHILS,  
HYPERVENTILATION, LEVARTERENOL, EXCRETION,  
CONFINED ENVIRONMENTS (U)  
IDENTIFIERS: EOSINOPENIA,  
HYPERCALCIURIA, HYPERCAPNIA, RECUMBENCY EFFECTS (U)

FOUR YOUNG MEN LIVED IN A CONTINUALLY ROTATING  
ROOM, 15 FEET IN DIAMETER, FOR A PERIOD OF SIX DAYS.  
ROTATIONAL VELOCITIES ON SUCCEEDING DAYS WERE:  
6.4, 6.4, 8.6, 10.0, 6.4, AND 3.2 RPM. STRESS  
EFFECTS MEASURED AS INCREASED EXCRETION RATES OF 17,  
21 DIHYDROXYPREGNANE-20-ONES, EOSINOPENIA,  
HYPERVENTILATION, AND NAUSEA WERE OBSERVED ON THE  
FIRST DAY OF ROTATION. HOWEVER, ADAPTATION WAS  
RAPID, AND NO FURTHER STRESS EFFECTS WERE OBSERVED  
EVEN WITH INCREASED ROTATIONAL VELOCITY. MILD  
DEGREES OF HYPERCALCIURIA, HYPERCAPNIA, AND DECREASED  
NOREPINEPHRINE EXCRETION RATES WERE OBSERVED DURING  
THE LAST FOUR DAYS OF THE EXPERIMENT AS A RESULT OF  
THE INCREASED TIME SPENT IN RECUMBENCY. (AUTHOR) (U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00529

AD-625 719 6/19  
AEROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB  
OHIO  
HUMAN TOLERANCE TO GZ 100 PER CENT GRADIENT  
SPIN. (U)  
66 IOP PIEMME, THOMAS E. ;  
REPT. NO. AMRL-TR-65-57,  
PROJ: AF-7222,

UNCLASSIFIED REPORT

AVAILABILITY: PUBLISHED IN AEROSPACE MEDICINE V27  
NI P16-21 JAN 1966.  
SUPPLEMENTARY NOTE: PRESENTED AT THE AEROSPACE MEDICAL  
ASSOCIATION MEETING, NEW YORK CITY, APRIL 28,  
1965.

DESCRIPTORS: (+ACCELERATION TOLERANCE, SPIN),  
STRESS(PHYSIOLOGY), CARIOVASCULAR SYSTEM,  
RESPIRATION, ELECTROCARDIOGRAPHY (U)

SEVEN AIR FORCE VOLUNTEERS WERE STUDIED ON A  
SHORT RADIUS (4 FOOT, 9 INCH) SPIN TABLE WITH THE  
SUBJECT RESTRAINED IN THE SUPINE POSITION, THE Z-  
AXIS ALONG THE RADIUS. ZERO GZ WAS EFFECTIVELY  
ACHIEVED AT EYE LEVEL; MAXIMUM G AT THE FEET. AT  
TWO ARBITRARILY SELECTED RATES OF ONSET (0.10 G  
PER SECOND AND 0.05 PER SECOND) THE TOLERANCE TO  
LEVELS UP TO 7G MAXIMUM AT THE FEET HAS BEEN  
DETERMINED. ELECTROCARDIOGRAM AND RESPIRATION WERE  
MONITORED. TOLERANCE END-POINTS WERE DEFINED AS  
PERIPHERAL LIGHT LOSS, CARDIAC RATES IN EXCESS OF 170  
PER MINUTE, OR THE ONSET OF SUCH SUBJECTIVE SYMPTOMS  
AS NAUSEA, SWEATING, OR LIGHTHEADEDNESS. A  
LOGARITHMIC TIME DURATION CURVE MAY BE CONSTRUCTED  
FROM 7 G, TOLERABLE FOR 2 MIN. 41 SEC., THROUGH 1  
G, TOLERABLE IN EXCESS OF TWO HOURS (AT WHICH  
EXPERIMENTS WERE ARBITRARILY TERMINATED). THIS  
CLEARLY EXCEEDS TOLERANCE TO STANDARD LONG ARM  
CENTRIFUGE ACCELERATION. AT HIGH G LEVELS, GREY-  
OUT AND TACHYCARDIA WERE FOUND TO BE LIMITING; IN THE  
MID-ZONE RANGE MUSCULOSKELETAL DISCOMFORT OF THE BACK  
AND LOWER EXTREMITIES WAS PROMINENT, BUT NOT AS  
LIMITING AS IN STANDARD LOW GRADIENT + GZ PROFILES.  
CORIOLIS PHENOMENA WERE MARKED, AND DEMANDED  
FIXATION OF HEAD POSITION. HEMATOCRITS AND FREE  
FATTY ACIDS DID NOT CHANGE AS A FUNCTION OF G LOAD.  
(AUTHOR) (U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00529

AO-626 474 6/19  
AEROSPACE TECHNOLOGY DIV LIBRARY OF CONGRESS WASHINGTON D  
C  
THE EFFECT OF ACCELERATIONS ON THE VESTIBULAR  
ANALYZER: BIBLIOGRAPHY. (U)  
JUN 66 25P SMITH, JANICE L. ;  
REPT. NO. ATD-66-62,  
MONITOR: TT 66-61894

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON SURVEYS AND FOREIGN  
SCIENTIFIC AND TECHNICAL LITERATURE.

DESCRIPTORS: (\*SPACE MEDICINE, VESTIBULAR  
APPARATUS), (\*VESTIBULAR APPARATUS,  
BIBLIOGRAPHIES), (\*ACCELERATION TOLERANCE,  
VESTIBULAR APPARATUS), STRESS(PHYSIOLOGY),  
OTORHINOLARYNGOLOGY, WEIGHTLESSNESS,  
ELECTROENCEPHALOGRAPHY, EAR, CEREBRAL CORTEX,  
STIMULATION, REFLEXES, MOTION SICKNESS, SPACE  
PERCEPTION, TRAINING, OOGS, USSR (U)

THE BIBLIOGRAPHY WAS COMPILED FROM SOVIET OPEN  
SOURCES PUBLISHED 1955-1966 TOGETHER WITH 5 WESTERN  
SOURCES. IT IS THE FIRST REPORT IN A SERIES AND  
DEALS WITH THE EFFECT OF ANGULAR, IMPACT, AND  
CORIOLIS ACCELERATIONS ON THE VESTIBULAR MECHANISM.  
THE BIBLIOGRAPHY IS DIVIDED INTO TWO SECTIONS.  
THE FIRST SECTION CONSISTS OF 112 ITEMS WHICH ARE  
CONSIDERED OF PRIMARY INTEREST. THE SECOND PART  
CONTAINS 27 ITEMS CONSIDERED OF SECONDARY INTEREST  
BECAUSE THEY CONTAIN ELEMENTARY OR BACKGROUND  
INFORMATION OR HAD ONLY A FEW RELEVANT PARAGRAPHS.  
PERTINENT INFORMATION INCLUDES: DIAGNOSTIC VALUE  
OF LABYRINTHINE REACTIONS, CHANGES IN THE FREQUENCY  
SPECTRUM OF AN ENCEPHALOGRAM DURING VESTIBULAR AND  
OPTOKINETIC STIMULATION, CORTICAL REGULATION OF  
VESTIBULAR REACTIONS, STIMULATION OF THE VESTIBULAR  
APPARATUS OF A DOG, DEVELOPMENT OF CONDITIONED  
VESTIBULAR REFLEXES, BIOLOGICAL AND PHYSIOLOGICAL  
STUDIES IN ROCKET AND SATELLITE FLIGHTS,  
PHYSIOLOGICAL EFFECTS OF GRAVITATION, SPATIAL  
ORIENTATION, EQUIPMENT FOR STUDY OF THE VESTIBULAR  
ANALYZER, EFFECT OF PROLONGED ACCELERATION, MOTION  
SICKNESS, VESTIBULAR TRAINING. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00529

AD-636 723 6/19  
NAVAL AIR DEVELOPMENT CENTER JOHNSVILLE PA AEROSPACE  
MEDICAL RESEARCH DEPT  
PULMONARY FUNCTION IN MAN UNDER PROLONGED  
ACCELERATION II. CORRELATION OF ARTERIAL BLOOD  
OXYGEN SATURATION WITH VENTILATION AND GAS BEING  
BREATHED. (U)  
DESCRIPTIVE NOTE: FINAL REPT.  
DEC 65 23P HOPPIN JR, FREDERIC C. I  
SEVER, RAYMOND J. I  
REPT. NO. NAOC-MR-6519,  
TASK: RA150J-059/2021/F022-01-03,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (ACCELERATION TOLERANCE,  
RESPIRATION), BLOOD ANALYSIS, OXYGEN, VOLUME,  
LUNGS, EAR, OXIMETERS (U)

ARTERIAL BLOOD OXYGEN SATURATION WAS STUDIED BY EAR  
OXIMETRY IN 8 SUBJECTS UNDERGOING PROLONGED FORWARD  
(+GX) ACCELERATION. THE EFFECTS ON SATURATION  
OF VOLUNTARY BREATHING PATTERNS AND THE COMPOSITION  
OF THE INSPIRED GAS WERE NOTED. UNDER +4GX  
SATURATION LEVELS WERE STABLE AFTER TWO MINUTES.  
THE DEGREE OF UNSATURATION COULD BE MODIFIED TO A  
SMALL EXTENT BY VOLUNTARY BREATHING EFFORTS. THE  
LEVEL OF SATURATION REACHED CORRELATED SIGNIFICANTLY  
WITH THE MINUTE VOLUME BREATHED. IN CONTRAST,  
UNDER +8GX SATURATION LEVELS WERE SIGNIFICANTLY  
LOWER AND WERE STILL FALLING AFTER TWO MINUTES.  
SATURATION LEVELS WERE NOT SIGNIFICANTLY CHANGED BY  
VOLUNTARY BREATHING EFFORTS AND THERE WAS NO  
SIGNIFICANT CORRELATION BETWEEN LEVEL OF SATURATION  
REACHED AND MINUTE VOLUME BREATHED. BREATHING OF  
OXYGEN DELAYED THE ONSET OF ARTERIAL BLOOD OXYGEN  
UNSATURATION. AFTER TWO MINUTES UNDER +8GX,  
LEVELS WERE 20% HIGHER WHEN THE SUBJECTS BREATHED  
OXYGEN THAN WHEN THEY BREATHED AIR. WHEN SUBJECTS  
CHANGED FROM AIR TO OXYGEN OR FROM OXYGEN TO AIR ON  
ATTAINING PEAK ACCELERATION, THE EFFECTS OF THE  
'PREBREATHED' GAS WERE APPARENT FOR AS LONG AS TWO  
MINUTES, SUGGESTING THAT THE PREBREATHED GAS WAS  
EFFECTIVELY TRAPPED IN SOME PARTS OF THE LUNG.  
(AUTHOR) (U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTRL ND. 200529

AD-637 182 6/19  
TECHNDLDGY INC DAYTON OHIO  
THE MOTION OF THE HUMAN CENTER OF MASS AND ITS  
RELATIONSHIP TO THE MECHANICAL IMPEDANCE. (U)  
DESCRIPTIVE NOTE: FINAL REPT., 1 JAN-31 DEC 64.  
JUN 66 25P WEIS, EDMUND B. , JR. ;  
PRIMIAND, FRANK P. , JR;  
CONTRACT: AF 33(657)-10010,  
PRDJ: AF-7231,  
TASK: 723101,  
MONITOR: AMRL TR-65-50

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*CENTER OF MASS, HUMANS),  
(\*ACCELERATION TOLERANCE, CENTER OF MASS),  
VELOCITY, DAMPING, FORCE(MECHANICS),  
ACCELERATION, MOTION, BIOPHYSICS,  
STRESS(PHYSIOLOGY), VIBRATION, FUNCTIONS,  
INTEGRAL TRANSFORMS, EQUATIONS OF MOTION (U)  
IDENTIFIERS: BIOMECHANICS (U)

THE REPORT CONCERNS THE DEVELOPMENT OF A  
RELATIONSHIP BETWEEN THE HUMAN MECHANICAL IMPEDANCE  
AND THE COUPLING OF THE HUMAN CENTER OF MASS TO THE  
ENVIRONMENT. THE MECHANICAL IMPEDANCE IS A COMMON  
ANALYSIS TOOL IN BIOMECHANICS WHILE THE ANALYSIS OF  
THE COUPLING OF THE CENTER OF MASS TO THE ENVIRONMENT  
IS TECHNICALLY MORE DIFFICULT, IF NOT IMPOSSIBLE.  
THE DEVELOPMENT IS BASED ON LINEAR, PASSIVE,  
ISOTROPIC THEORY AND SHOWS THAT THE TRANSFER FUNCTION  
WHICH EXPRESSES THE RELATION BETWEEN THE MOTION OF  
THE CENTER OF MASS AND THE MOTION OF THE SOURCE IS  
SIMILAR TO A LINEAR SECOND ORDER MECHANICAL SYSTEM IN  
EACH OF THE TRANSLATIONAL SPATIAL DEGREES OF FREEDOM.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200929

AO-637 184 6/19 6/14  
WILFORD HALL HOSPITAL (AIR FORCE) LACKLAND AFB TEX  
AEROSPACE MEDICAL LAB (CLINICAL)  
PHYSICAL CONDITIONING VERSUS +GZ TOLERANCE. (U)  
66 7P COOPER, KENNETH H. I  
REPT. NO. AMLC-T-66-2,  
PROJ: AF-7756,

UNCLASSIFIED REPORT  
AVAILABILITY: PUBLISHED IN AEROSPACE MEDICINE V37  
NS P462-3 MAY 1966.  
SUPPLEMENTARY NOTE:

DESCRIPTORS: (+PHYSICAL FITNESS, +ACCELERATION  
TOLERANCE), (+ENDURANCE, TRAINING), ASTRONAUTS,  
STRESS (PHYSIOLOGY), EXERCISE, OXYGEN  
CONSUMPTION, SPACE MEDICINE (U)

ENDURANCE TRAINING APPEARS TO INCREASE THE PILOT'S  
RESISTANCE TO OTHER ENVIRONMENTAL STRESSES  
ENCOUNTERED IN FLIGHT, BUT IT HAS NO EASILY DEFINABLE  
EFFECT ON +GZ (FOR POSITIVE G) TOLERANCE. AN  
ATTEMPT WAS MADE IN THIS STUDY TO DETERMINE THE  
EFFECT OF ENDURANCE TRAINING ON +GZ TOLERANCE IN  
EXPERIENCED CENTRIFUGE SUBJECTS. ELEVEN SUBJECTS  
WERE DIVIDED INTO SIX EXERCISERS AND FIVE CONTROLS.  
FOR THREE MONTHS THE EXERCISERS ENGAGED IN A DAILY  
(FIVE TIMES A WEEK) PROGRESSIVE RUNNING PROGRAM  
WHILE THE CONTROLS WERE ASKED TO AVOID VIGOROUS  
EXERCISE. FREQUENTLY DURING THIS PERIOD, ALL  
ELEVEN SUBJECTS WERE SUBJECTED TO BOTH RAPID ONSET  
AND GRADUAL ONSET RUNS ON THE USAF SCHOOL OF  
AEROSPACE MEDICINE CENTRIFUGE. AT THE  
CONCLUSION OF THE THREE MONTHS, SIGNIFICANT  
DIFFERENCES WERE NOTICED BETWEEN THE EXERCISE AND  
CONTROL GROUPS IN ENDURANCE CAPACITY AS INDICATED BY  
AN INCREASE IN MAXIMAL OXYGEN CONSUMPTION.  
HOWEVER, NO SIGNIFICANT DIFFERENCE WAS NOTED  
BETWEEN THE TWO GROUPS IN THEIR ABILITY TO TOLERATE  
POSITIVE GS DURING EITHER GRADUAL OR RAPID ONSET  
CENTRIFUGE RUNS. IN THIS STUDY, NEITHER AN INCREASE  
NOR A DECREASE IN +GZ TOLERANCE COULD BE CORRELATED  
WITH ENDURANCE CAPACITY. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00929

AO-628 719 6/19  
AEROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB  
OHIO  
EFFECT OF ANTERIOR INTERCOSTAL NERVE BLOCK ON THE  
THRESHOLD OF THORACTIC PAIN ASSOCIATED WITH GZ AND GX  
VIBRATION. (U)  
DESCRIPTIVE NOTE: TECHNICAL REPT.  
JUL 66 IOP HENZEL, J. H. ; CLARKE, N. P. ;  
MOHR, G. C. ;  
REPT. NO. AHRL-TR-65-68,  
PROJ: AF-7231,  
TASK: 723101,

UNCLASSIFIED REPORT  
AVAILABILITY: PUBLISHED IN AEROSPACE MEDICINE V37  
N7 P682-7 JULY 1966.  
SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*VIBRATION, PAIN), (\*ACCELERATION  
TOLERANCE, \*PAIN), THRESHOLDS (PHYSIOLOGY),  
ANESTHESIA, NERVES, THORAX (U)

IN INVESTIGATING THE ORIGIN OF CHEST PAIN  
ASSOCIATED WITH GZ PLUS OR MINUS NGZ AND GX PLUS  
OR MINUS NGX SINUSOIDAL VIBRATION, THE EFFECT OF  
ANTERIOR CHEST WALL ANESTHETIZATION WAS STUDIED.  
SUBJECTS WERE EXPOSED TO VIBRATION OF INCREASING  
AMPLITUDE AND THE ACCELERATION REQUIRED TO INDUCE  
PERCEPTIBLE CHEST PAIN WAS TAKEN AS THE THRESHOLD.  
TWO RANDOMLY ORDERED THRESHOLD DETERMINATIONS WERE  
MADE IN EACH TEST. IN ONE, VIBRATION WAS PRECEDED  
BY BILATERAL ANESTHETIZATION OF THE SECOND THROUGH  
SIXTH INTERCOSTAL NERVES. IN THE OTHER,  
INTRADERMAL INFILTRATION OF ANESTHETIC CREATED A  
SENSATION SOMEWHAT SIMILAR TO THIS WITHOUT ACTUALLY  
BLOCKING THE NERVES; THIS PROVIDED A CONTROL  
CONDITION WITH MINIMAL SUBJECTIVE BIAS FOR  
COMPARISON. SUBSEQUENT TO INTERCOSTAL NERVE BLOCK,  
THERE WAS A STATISTICALLY SIGNIFICANT ( $P < 0.01$ )  
INCREASE IN THRESHOLD OF CHEST PAIN FOR BOTH  
ORIENTATIONS OF VIBRATION. THESE RESULTS STRONGLY  
SUGGEST THAT VIBRATION INDUCED CHEST PAIN ORIGINATES  
IN THE CHEST WALL AND NOT IN THE MORE CRITICAL  
CARDIAC-GREAT VESSEL COMPLEX. (AUTHOR) (U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200529

AD-628 792 6/19 6/16 6/2  
AEROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB  
OHIO  
MECHANICAL IMPEDANCE AS A TOOL IN BIOMECHANICS. (U)  
DESCRIPTIVE NOTE: FINAL REPT., JUL 63-JUL 64.  
JUN 66 30P WEIS, EDMUND B. ;  
CLARKE, NEVILLE P. ; VON GIERKE, HENNING E. ;  
REPT. NO. AMRL-TR-66-84,  
PROJ: AF-7231,  
TASK: 723101,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*ACCELERATION TOLERANCE, HUMAN  
ENGINEERING), (\*VIBRATION,  
TOLERANCES (PHYSIOLOGY)), STRESS (PHYSIOLOGY),  
TEST METHODS, BIOPHYSICS, FUNCTIONS (U)  
IDENTIFIERS: MECHANICAL IMPEOANCE,  
BIOMECHANICS (U)

THE REPORT PRESENTS NEW MEASUREMENTS OF MECHANICAL  
IMPEDANCE IN THE TRANSIENT ACCELERATION ENVIRONMENT  
AND COMPARES THE RESULTS WITH PREVIOUS MEASUREMENTS  
MADE IN THE STEADY STATE SINUSOIDAL ACCELERATION  
ENVIRONMENT. ALTHOUGH THERE ARE SOME DISCREPANCIES  
WHICH AWAIT FURTHER CLARIFICATION, THE TRANSFER  
FUNCTION OBTAINED UNDER THESE TWO ENVIRONMENTS SHOW  
ENCOURAGING GENERAL CORRELATION. WITH FURTHER  
SOPHISTICATION OF THE METHOD, THE TRANSIENT IMPEOANCE  
MEASUREMENT SHOWS CONSIDERABLE POTENTIAL IN THAT A  
SINGLE TEST FURNISHES DATA OVER A SPECTRUM OF  
FREQUENCIES AND PROVIDES A MORE GENERAL EXCITATION  
CONDITION. ALTHOUGH IT HAS ONLY BEEN RECENTLY  
EMPLOYED FOR THIS PURPOSE, THE PRACTICAL USEFULNESS  
OF THE IMPEOANCE METHOD AS A MEANS OF ESTABLISHING  
DESIGN CRITERIA FOR PROTECTION SYSTEMS IS MOST  
ENCOURAGING. WITH FURTHER DEFINITION OF THE  
MECHANODYNAMIC PROPERTIES OF THE BODY OF PROTECTION  
SYSTEM COMPONENTS, IT APPEARS REASONABLE THAT  
BIOMECHANICS CAN ACHIEVE THE GOAL OF PROVIDING  
OPTIMIZED PROTECTION AGAINST THE INCREASINGLY SEVERE  
MECHANICAL ENVIRONMENTS GENERATED IN AEROSPACE  
VEHICLES AND GROUND TRANSPORTATION. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00529

AD-641 418 6/19 5/10  
ARMY MEDICAL RESEARCH LAB FORT KNOX KY  
CONCOMITANT VISUAL STIMULATION DOES NOT ALTER  
HABITUATION OF NYSTAGMIC, OCULOGYRAL OR  
PSYCHOPHYSICAL RESPONSES TO ANGULAR ACCELERATION, (U)  
APR 65 22P BROWN, JAMES H. ;  
CRAMPTON, GEORGE H. ;  
PROJ: DA-2A014501871P  
TASK: 08  
MONITOR: USAMRL 664

UNCLASSIFIED REPORT  
AVAILABILITY: PUBLISHED IN ACTA OTO-LARYNG V61 P80-  
91 1965.

DESCRIPTORS: (\*NYSTAGMUS, \*ACCELERATION  
TOLERANCE), VESTIBULAR APPARATUS,  
PSYCHOPHYSIOLOGY, STIMULATION, VISION, TEST  
METHODS (U)  
IDENTIFIERS: HABITUATION (U)

CONCOMITANT VISUAL STIMULATION, VARIED BETWEEN FOUR  
GROUPS OF 20 YOUNG MEN EACH FROM TOTAL DARKNESS TO  
FULL ROOM ILLUMINATION, WAS INTRODUCED ON HABITUATION  
TRIALS THAT WERE INTERPOLATED BETWEEN TEST TRIALS.  
ALTHOUGH HIGHLY SIGNIFICANT DECREMENTS FOR  
NYSTAGMIC, OCULOGYRAL AND PSYCHOPHYSICAL RESPONSES  
WERE FOUND WITH REPEATED TESTING, THE DIFFERENT  
VISUAL CONDITIONS IN NO WAY ALTERED THIS HABITUATION.  
(AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200529

AO-643 882 6/19

SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX  
CARDIAC ARRHYTHMIAS OCCURRING DURING  
ACCELERATION. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,

JAN 66 11P TORPHY, D. E. ; LEVERETT, S. D. ;

LAMB, L. E. ;

REPT. NO. SAM-TR-65-293

TASK: 792003

UNCLASSIFIED REPORT

AVAILABILITY: PUBLISHED IN AEROSPACE MEDICINE V37  
N1 P52-8 JAN 1966.

DESCRIPTORS: (+ARRHYTHMIA, +ACCELERATION  
TOLERANCE), HEART, ACCELERATION,  
ELECTROCARDIOGRAPHY, SPACE MEDICINE (U)

FORTY-TWO PILOTS WERE EXPOSED TO +6X AND +6Z  
ACCELERATION IN A VARIETY OF PROFILES AND THE  
INCIDENCE OF ARRHYTHMIAS INVESTIGATED. +6Z  
ACCELERATION DID NOT INCREASE THE INCIDENCE OF  
ARRHYTHMIAS. +6X ACCELERATION INCREASED THE  
INCIDENCE OF ARRHYTHMIAS AND THIS INCREASE SEEMED  
RELATED TO BOTH THE DEGREE AND DURATION OF  
ACCELERATION. PREMATURE CONTRACTIONS, WITH AND  
WITHOUT ABERRANT CONDUCTION, FROM BOTH THE ATRIA AND  
VENTRICLES WERE NOTED. ONE SUBJECT HAD PAROXYSMAL  
AURICULAR TACHYCARDIA WITH +6X ACCELERATION.  
POSSIBLE CAUSAL MECHANISMS ARE DISCUSSED.  
(AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00529

AO-644 003 6/12 6/19

NAVAL AEROSPACE MEDICAL INST PENSACOLA FLA  
A TORQUE MOTOR SERVOROTATOR FOR VESTIBULAR  
APPLICATION.

(U)

DESCRIPTIVE NOTE: JOINT REPT.,

SEP 66 20P HIXSON, W. CARROLL ;

NIVEN, JORMA I. ;

REPT. NO. NAMI-979

MONITOR: NAVMED

HR005.04-0021.127

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPORT PREPARED JOINTLY WITH NASA,  
NASA-OROER-R-92.

DESCRIPTORS: (\*VESTIBULAR APPARATUS, ACCELERATION  
TOLERANCE), (\*ACCELERATION TOLERANCE, TEST  
EQUIPMENT), SERVOMECHANISMS, SERVOMOTORS,  
ACCELERATION, NYSTAGMUS, ROTATION, RESPONSES,  
SPACE MEDICINE

(U)

THE PERIODIC ANGULAR ROTATOR IS A NOVEL  
SERVOROTATOR DESIGNED FOR STUDIES OF THE DYNAMIC  
RESPONSE OF THE OCULOVESTIBULAR SYSTEM. IT WILL  
ROTATE A SINGLE SUBJECT ABOUT AN EARTH-VERTICAL  
AXIS IN A WIDE VARIETY OF STIMULUS WAVEFORMS. STEP  
FUNCTION, RAMP, AND SINUSOIDAL ANGULAR MOTIONS ARE  
GENERATED PRECISELY BY A CLOSED-LOOP POWER  
SERVOMECHANISM DRIVE SYSTEM. THE USE OF A LOW  
SPEED OC TORQUE MOTOR COUPLED DIRECTLY TO THE  
PAYLOAD RESULTED IN A SYSTEM WITH LOW ACOUSTIC NOISE  
AND MECHANICAL VIBRATION PROPERTIES, FAST DYNAMIC  
RESPONSE CHARACTERISTICS, AND A HIGH DEGREE OF  
COUPLING STIFFNESS. WHEN OPERATED IN A VELOCITY  
MODE OF CONTROL, THE DEVICE IS RATED TO PRODUCE A  
MAXIMUM ANGULAR VELOCITY OF 100 RPM EITHER CLOCKWISE  
OR COUNTERCLOCKWISE AT ANGULAR ACCELERATIONS UP TO  
100 DEG/SQ SEC AND SINUSOIDAL OSCILLATION FREQUENCIES  
BEYOND 2.0 CPS. WHEN OPERATED IN THE ALTERNATIVE  
DISPLACEMENT MODE, SIMILAR RATINGS APPLY OVER A PLUS  
OR MINUS 190 DEGREE EXCURSION. (AUTHOR)

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200529

AO-647 211 14/2 6/19  
NAVAL AEROSPACE MEDICAL INST PENSACOLA FLA  
THE CORIOLIS ACCELERATION PLATFORM. A UNIQUE  
VESTIBULAR RESEARCH DEVICE, (U)  
OCT 66 36P HIXSON, W. CARROLL I  
ANDERSON, JOHN J. I  
REPT. NO. NAMI-980  
MONITOR: NAVMED MR005.04.0021-128

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED IN COOPERATION WITH NASA,  
ORDER NO. R-99.

DESCRIPTORS: (+ACCELERATION TOLERANCE, +TEST  
FACILITIES), (+VESTIBULAR APPARATUS,  
ACCELERATION TOLERANCE), ROTATION, LINEAR  
ACCELERATORS, SIMULATION, SPACE MEDICINE (U)

THE REPORT PRESENTS A BRIEF DESCRIPTION OF THE  
CORIOLIS ACCELERATION PLATFORM, A NEW COMBINED  
LINEAR AND ANGULAR MOTION-PRODUCING VESTIBULAR  
RESEARCH DEVICE DEVELOPED TO STUDY THE BIOLOGICAL  
EFFECTS OF AEROSPACE ACCELERATION ENVIRONMENTS.  
THE PRIMARY ELEMENT OF THE DEVICE IS A 20-FT  
DIAMETER CAPSULE EQUIPPED WITH VARIOUS LIFE-SUPPORT  
EQUIPMENTS TO STUDY THE LONG-TERM EFFECTS OF  
CONTINUOUS ROTATION. A LOW RPM, DIRECT-COUPLED,  
DC TORQUE MOTOR OPERATED IN A CLOSED-LOOP, VELOCITY  
MODE, POWER SERVOMECHANISM CONFIGURATION ROTATES THE  
DEVICE IN EITHER DIRECTION AT ANGULAR VELOCITIES  
EXTENDING TO 200 DEG/SEC AT ACCELERATIONS RANGING TO  
15 DEG/SQ SEC. A SECOND DRIVE SYSTEM CAN BE  
PROGRAMMED TO PRODUCE TIME-VARYING RECTILINEAR  
TRANSLATIONS OF A SINGLE SUBJECT ALONG A TRACK  
STRUCTURE FIXED TO THE CAPSULE WHERE THIS FORM OF  
MOTION CAN OCCUR SINGLY, OR IN COMBINATION WITH  
ROTATION OF THE ENTIRE DEVICE. PEAK RATINGS OF THE  
LINEAR DRIVE SYSTEM INCLUDE A RADIAL DISPLACEMENT OF  
PLUS OR MINUS 20 FT, A LINEAR VELOCITY OF PLUS OR  
MINUS 16 FT/SEC, AND A LINEAR ACCELERATION OF 96 FT/  
SQ SEC (2 G). (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00929

AO-649 545 6/19 5/10  
ARMY MEDICAL RESEARCH LAB FORT KNOX KY  
INTERACTING VESTIBULAR STIMULI AND NYSTAGMIC  
HABITUATION, (U)  
FEB 66 16P BROWN, JAMES H. ;  
PROJ: OA-2A025601A819  
MONITOR: USAHRL 715

UNCLASSIFIED REPORT  
AVAILABILITY: PUBLISHED IN ACTA OTO-LARYNG V62  
P241-50.

DESCRIPTORS: (+VESTIBULAR APPARATUS,  
+ACCELERATION TOLERANCE), (+NYSTAGMUS,  
HABITUATION LEARNING), RESPONSES, STIMULATION,  
ANALYSIS OF VARIANCE, SEMICIRCULAR CANALS,  
PSYCHOPHYSIOLOGY (U)

FIFTEEN NORMAL MALE SUBJECTS WERE REPEATEOLY  
EXPOSED TO INTERACTING ANGULAR ACCELERATIONS (A  
POSITIVE ACCELERATION IMMEDIATELY FOLLOWED BY A  
NEGATIVE ACCELERATION OF EQUAL INTENSITY AND  
DURATION). PRE- AND POST-TEST TRIALS, CONSISTING  
OF STANDARD SINGLE ANGULAR ACCELERATIONS, PERMITTED  
EVALUATION OF THE NECESSITY FOR HABITUATION OF REST  
INTERVALS BETWEEN SUCCESSIVELY PRESENTED STIMULI.  
SINCE SIGNIFICANT RESPONSE DECREMENTS WERE EVIDENT  
IN BOTH THE POST-TEST RESPONSES AND RESPONSES TO THE  
INTERACTING STIMULI, IT WAS CONCLUDED THAT NYSTAGMIC  
HABITUATION MAY OCCUR WITHOUT NYSTAGMUS RUNNING TO  
NORMAL COMPLETION. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00529

AD-649 615 6/19 5/10  
CIVIL AEROMEDICAL INST OKLAHOMA CITY OKLA  
ADAPTATION TO VESTIBULAR DISORIENTATION. III.  
INFLUENCE ON ADAPTATION OF INTERRUPTING NYSTAGMIC EYE  
MOVEMENTS WITH OPPOSING STIMULI. (U)  
SEP 66 12P COLLINS, W. E. I  
MONITOR: FAA-AM 66-37

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-621 435.

DESCRIPTORS: (•NYSTAGMUS, HABITUATION  
LEARNING), (•VESTIBULAR APPARATUS,  
ADAPTATION(PHYSIOLOGY)), (•ACCELERATION  
TOLERANCE, NYSTAGMUS), STIMULATION, RESPONSES,  
ELECTROPHYSIOLOGY (U)  
IDENTIFIERS: ELECTRONYSTAGMOGRAPHY (U)

FAILURE OF ADAPTATION OF NYSTAGMIC EYE MOVEMENTS TO  
OCCUR UNDER CERTAIN CONDITIONS OF STIMULATION BY  
ANGULAR ACCELERATION HAS BEEN ASCRIBED TO A FAILURE  
TO ALLOW THE EYE-MOVEMENT RESPONSE TO RUN ITS COURSE.  
IN THIS STUDY, 3 GROUPS OF SUBJECTS WERE TESTED  
UNDER CONDITIONS OF REPEATED ANGULAR ACCELERATIONS IN  
WHICH GROUP A RECEIVED UNIDIRECTIONAL  
STIMULATION, GROUP B RECEIVED BIDIRECTIONAL  
STIMULATION WITH BOTH RESPONSES ALLOWED TO RUN THEIR  
COURSE, AND GROUP C RECEIVED BIDIRECTIONAL  
STIMULATION BUT THE RESPONSE IN ONE DIRECTION WAS  
INTERRUPTED. ADAPTATION OCCURRED FOR ALL GROUPS IN  
SPITE OF THE DIFFERENT TEST PROCEDURES. OTHER  
IMPLICATIONS OF THE RESULTS ARE DISCUSSED.  
(AUTHOR) (U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00529

AO-690 331 6/12  
MAX-PLANCK-INSTITUT FUER VERHALTENSPHYSIOLOGIE SEEWIESEN  
(WEST GERMANY)  
AN INEXPENSIVE VARIABLE-RADIUS CENTRIFUGE FOR  
PHYSIOLOGICAL EXPERIMENTS, (U)  
JUN 66 BP HOWLAND, H. C. ; HOWLAND, B.  
; STROBELE, R. ; JAHDE, J. ;  
CONTRACT: AF-EOAR-44-64  
PROJ: AF-9777  
TASK: 977701  
MONITOR: AFOSR 67-0871

UNCLASSIFIED REPORT

AVAILABILITY: PUBLISHED IN JOURNAL OF APPLIED  
PHYSIOLOGY V21 N6 P1938-42 NOV 1966.

DESCRIPTORS: (\*MEDICAL EQUIPMENT,  
\*CENTRIFUGES), SPACE MEDICINE, ACCELERATION  
TOLERANCE, TEST EQUIPMENT, LABORATORY EQUIPMENT,  
INSTRUMENTATION, COSTS, STRESS(PHYSIOLOGY),  
GRAVITY(ARTIFICIAL) (U)

THE CONSTRUCTION OF AN INEXPENSIVE (LESS THAN  
\$8,000) VARIABLE-RADIUS CENTRIFUGE FOR  
PHYSIOLOGICAL EXPERIMENTS IS DESCRIBED AND ITS  
CAPABILITIES AS A TOOL FOR RESEARCH ARE GIVEN. THE  
MAXIMUM RADIUS OF THE CENTRIFUGE IS 4.2 M. IT IS  
CAPABLE OF ACCELERATING A 200-KG PAYLOAD TO  
APPROXIMATELY 10 G AT ANY RADIUS BETWEEN 1.5 AND 4.2  
M. THE CENTRIFUGE IS MOBILE, RIDING ON THREE  
WHEELS, AND ITS WINGS ARE REMOVABLE. IN OPERATION  
IT RESTS ON THREE SPINDLES, ONE OF WHICH MAY BE  
EXTENDED TO TIP THE CENTRIFUGE AND PERMIT STATIONARY  
COUNTERBALANCING OF THE PAYLOAD. BALANCE OF THE  
STATIONARY OR MOVING CENTRIFUGE MAY ALSO BE MONITORED  
VIA ELECTRONIC STRAIN GAGES MOUNTED WITHIN ITS  
CENTRAL STATIONARY AXLE. NINE SLIP RINGS CARRY  
POWER TO THE MOVING FRAME AND PROVIDE IT WITH FOUR  
LOW-VOLTAGE SIGNAL CHANNELS AND A TELEVISION CHANNEL.  
(AUTHOR) (U)

UNCLASSIFIED

OOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200929

AO-650 481 6/12 6/19  
ADMIRAL CORP CHICAGO ILL  
X-RAY MOTION MONITOR: LOW-DOSAGE, WIDE-VARIABLE-  
FIELD TELEVISION RADIOGRAPH FOR BIOYNAMIC ANALYSIS. (U)  
DESCRIPTIVE NOTE: FINAL REPT., MAY 64-DEC 65,  
DEC 66 44P LEYSETH, WILLIAM EDMUND, B. ,  
JR;  
REPT. NO. A-12300  
CONTRACT: AF 33(615)-1878  
PROJ: AF-7231  
TASK: 723101  
MONITOR: AMRL TR-66-104

UNCLASSIFIED REPORT

DESCRIPTORS: (•ACCELERATION TOLERANCE,  
•RADIOGRAPHY), CLOSED CIRCUIT TELEVISION, X-  
RAY PHOTOGRAPHY, MEDICAL EXAMINATION, MOTION,  
MONITORS, BODY, RADIOLOGICAL DOSAGE,  
TELEVISION EQUIPMENT, FLUORESCENT SCREENS,  
RECORDING SYSTEMS, SPACE MEDICINE (U)

THE X-RAY MOTION MONITOR PROVIDES A NEW AND  
VERSATILE TOOL FOR EXPERIMENT AND RESEARCH WORK IN  
THE FIELD OF BIODYNAMICS. THE EQUIPMENT  
ESSENTIALLY CONSISTS OF A PULSED X-RAY SOURCE  
SYNCHRONIZED WITH A CLOSED CIRCUIT TV SYSTEM,  
UTILIZING A FLUORESCENT INTENSIFYING SCREEN TO  
CONVERT THE X-RAYS INTO A VISIBLE PATTERN. THE  
'HEAD' PORTIONS OF THE EQUIPMENT ARE DESIGNED TO  
WITHSTAND ACCELERATION UP TO 147 METERS/SQ SEC WHILE  
RIGIDLY MOUNTED TO A TEST PLATFORM, AND UP TO 392  
METERS/SQ SEC ON SPECIAL SHOCK FIXTURES DESIGNED FOR  
DROP TESTS. THE LIGHT OUTPUT OF THE FLUORESCENT  
SCREEN IS MATCHED WITH THE SPECTRAL RESPONSE OF THE  
IMAGE ORTHICON TUBE IN THE TV CAMERA TO PROVIDE  
PEAK PERFORMANCE WHILE EMPLOYING EXTREMELY LOW X-RAY  
DOSAGES. THE X-RAY SOURCE IS PULSED ON FOR ONLY 1/  
16 OF THE TOTAL OBSERVATION TIME (1 MILLISECOND FOR  
EVERY 16.7 MILLISECONDS). THE SYSTEM PERMITS  
VISUAL OBSERVATION, AND/OR CINE OR VIDEO TAPE  
RECORDING, OF AN X-RAY VIEW UP TO A SIZE OF 20 BY 20  
INCHES OF THE INTERNAL ORGANS OF A LIVE TEST SUBJECT  
WHILE UNDER ACCELERATION OR SHOCK. IN ADDITION,  
SPECIAL VIDEO PROCESSORS IN THE SYSTEM PROVIDE  
VOLTAGE ANALOG OUTPUTS CORRESPONDING TO THE MOVEMENTS  
OF SELECTED INTERNAL TARGETS IN RELATION TO SOME  
FIXED INTERNAL OR EXTERNAL REFERENCE POINTS. THESE  
ANALOG SIGNALS CAN BE RECORDED BY GRAPHIC RECORDING  
DEVICES FOR REFERENCE AND LATER ANALYSIS.  
(AUTHOR)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00929

AD-691 067 6/19 6/3  
NAVAL AEROSPACE MEDICAL INST PENSACOLA FLA  
CENTRIFUGATION OF THE WHITE-FRONTED CAPUCHIN MONKEY,  
CEBUS ALBIFRONS (HUMBOLDT). (U)  
DESCRIPTIVE NOTE: JOINT REPT.,  
DEC 66 15P KNEPTON, JAMES C. , JR;  
REPT. NO. NAMI-997  
MONITOR: NAVMED HRO05.04-0022-2

UNCLASSIFIED REPORT

DESCRIPTORS: (+ACCELERATION TOLERANCE,  
+MONKEYS), SPACE MEDICINE,  
ELECTROCARDIOGRAPHY, BODY TEMPERATURE,  
RESPIRATION, CENTRIFUGES (U)

IN PREPARATION FOR BIOLOGICAL EXPERIMENTS ABOARD  
ORBITING LABORATORIES THREE CEBUS ALBIFRONS, WHITE-  
FRONTED CAPUCHIN MONKEY, WERE EXPOSED TO FIVE  
HEADWARD-DIRECTED (+AZ) RESULTANT LINEAR  
ACCELERATION STIMULI ABOARD A CENTRIFUGE AND THEIR  
ECG'S, SKIN TEMPERATURES, AND BREATHING RATES  
RECORDED. MARKED TACHYCARDIA WAS NOTED AT THE  
START OF THE CENTRIFUGATION, FOLLOWED BY BRADYCARDIA  
WITHIN 6 TO 7 MINUTES AT 7.5 G AND WITHIN 1 1/2  
MINUTES AT 10.3 G. CONCOMITANT WITH THE ONSET OF  
BRADYCARDIA, A LOUD SQUEAL WAS USUALLY HEARD.  
THERE WERE NO SIGNIFICANT TEMPERATURE CHANGES, AND  
BREATHING RATES DID NOT VARY FROM NORMAL. NORMAL  
HEART RATE WAS RESTORED UPON CESSATION OF  
CENTRIFUGATION. IT APPEARS THAT THE CEBUS CAN  
WITHSTAND THE ACCELERATION OF SPACE TRAVEL AND  
THEREFORE WILL BE A GOOD EXPERIMENTAL ANIMAL IN THAT  
ENVIRONMENT. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200529

AO-655 436 6/19

NAVAL AIR DEVELOPMENT CENTER JOHNSVILLE PA AEROSPACE  
MEDICAL RESEARCH DEPT  
HUMAN ACCELERATION EXPERIENCE AT THE U.S. NAVAL AIR  
DEVELOPMENT CENTER-JOHNSVILLE: 1 JANUARY 1961-30  
DECEMBER 1965. (U)

DESCRIPTIVE NOTE: PHASE REPT.,

MAY 67 18P YORK, ELIHU IOLEYNIK, R. J.

IPATTON, R. M. I

REPT. NO. NAOC-MR-6711

MONITOR: NAVMED

MFD22.01.03-7001-12

UNCLASSIFIED REPORT

DESCRIPTORS: (+ACCELERATION TOLERANCE,  
EXPERIMENTAL DATA), STRESS(PHYSIOLOGY),  
BLACKOUT(PHYSIOLOGY), ARRHYTHMIA, MOTION  
SICKNESS, CENTRIFUGES, SIMULATION, PATHOLOGY,  
RESPIRATION, ELECTROCARDIOGRAPHY, AVIATION  
MEDICINE, SPACE MEDICINE (U)

IDENTIFIERS: GREYOUT (U)

A FIVE YEAR RETROSPECTIVE SURVEY WAS UNDERTAKEN IN  
ORDER TO LEARN THE CONSEQUENCES OF ACCELERATION  
EXPOSURE ON HUMAN SUBJECTS. UTILIZING A PUNCHED-  
CARD DATA SYSTEM, 5071 HUMAN SUBJECT RUNS INVOLVING  
280 INDIVIDUALS WERE ANALYZED. SYMPTOMATOLOGY  
OCCURRED IN 75% OF GZ RUNS AND 52% OF GX  
RUNS. DURING 2280 +GZ RUNS GREYOUT WAS NOTED 251  
TIMES AND BLACKOUT 167 TIMES; DURING 2557 +GX RUNS,  
CHEST PAIN OCCURRED 104 TIMES, MOTION SICKNESS 97  
TIMES, CARDIAC ARRHYTHMIA AND DYSPNEA 29 TIMES EACH.  
MISCELLANEOUS COMPLAINTS DURING ACCELERATION  
INCLUDED MYALGIA, HEADACHE AND ABDOMINAL PAIN. NO  
DISABLING SEQUELAE WERE NOTED IN ANY SUBJECT. A  
MEDICAL MONITORING SYSTEM COMPRISED OF VOICE  
COMMUNICATION, TELEVISION OBSERVATION, AND  
ELECTROCARDIOGRAPHIC RECORDING FROM THE SUBJECT  
PROVED TO BE A SAFE SYSTEM FOR RECORDING MINIMAL  
RESPONSES. AS MAN IS EXPOSED TO MORE HAZARDOUS  
ENVIRONMENTS OF HIGH-PERFORMANCE JET AIRCRAFT OR  
SPACE CAPSULES, MORE DETAILED INFORMATION INVOLVING  
FURTHER EXPERIMENTATION WITH THE HUMAN CENTRIFUGE MAY  
BE REQUIRED, EMPLOYING COMPLEX MONITORING SYSTEMS, IN  
ORDER TO GAIN ADEQUATE KNOWLEDGE OF MAN'S TOLERANCE  
TO ACCELERATION, AN IMPORTANT VARIABLE AFFECTING  
MANNED FLIGHT. (AUTHOR) (U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY    SEARCH CONTROL NO. 200529

AD-657 417                      6/19

SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX  
EFFECT OF -7GX ACCELERATION ON RENAL EXCRETION OF  
SOLUTES IN RABBITS, (U)

67                      8P                      BRICKER, LEE A. ;  
JOHNSON, WAYNE A. ; DAVIES, CHESLEY R. ;  
DOTTORE, ROBERT A. ;  
REPT. NO. SAM-TR-66-291  
TASK: 793003

UNCLASSIFIED REPORT

AVAILABILITY: PUBLISHED IN AEROSPACE MEDICINE  
V28 N1 P25-8 JAN 1967.

DESCRIPTORS: (+ACCELERATION TOLERANCE, URINARY  
SYSTEM), URINE, EXCRETION, SODIUM,  
POTASSIUM, BLOOD, ERYTHROCYTES (U)

THE EFFECTS OF ONE HOUR OF UNINTERRUPTED -7GX  
ACCELERATION ON RATE OF URINE FLOW AND URINARY  
EXCRETION OF SODIUM, POTASSIUM, AND TOTAL SOLUTE WERE  
STUDIED IN RABBITS. URINE FLOW RATE DURING  
EXPOSURE TO ACCELERATION FELL TO AN AVERAGE OF 56 PER  
CENT OF CONTROL VALUES; URINARY EXCRETION OF SODIUM  
FELL CONCURRENTLY TO 45 PER CENT OF CONTROL, AND  
POTASSIUM TO 67 PER CENT. THERE WAS NO SIGNIFICANT  
CHANGE IN TOTAL SOLUTE EXCRETION. THE DECLINES  
OBSERVED WERE ABRUPT, AS WERE THE RETURNS TO CONTROL  
LEVELS AFTER ACCELERATION. THE DATA SUGGEST THAT  
HEMOYNAMIC RATHER THAN HORMONAL INFLUENCES WERE  
PRIMARY RESPONSIBLE FOR THESE CHANGES. GROSS OR  
MICROSCOPIC HEMATURIA OBSERVED IN THE SEDIMENTS OF  
MOST ACCELERATION URINE SPECIMENS DISAPPEARED OR  
ABATED DURING THE RECOVERY PHASE. OCCASIONAL RED  
CELL CASTS INDICATED THAT THE HEMATURIA WAS DUE, AT  
LEAST IN PART, TO AN INTRARENAL LESION.  
(AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00529

AD-660 287 6/19 5/10  
ARMY MEDICAL RESEARCH LAB FORT KNOX KY  
VISUAL-VESTIBULAR INTERACTION AND THRESHOLD FOR  
ANGULAR ACCELERATION. (U)  
DESCRIPTIVE NOTE: FINAL REPT.,  
OCT 67 12P MARSHALL, JOHN E. I  
REPT. NO. USAMRL-754  
PROJ: DA-2A029601A819

UNCLASSIFIED REPORT

DESCRIPTORS: (ACCELERATION TOLERANCE,  
VISION), VESTIBULAR APPARATUS,  
THRESHOLDS (PHYSIOLOGY), ILLUMINATION,  
SENSITIVITY, PSYCHOPHYSIOLOGY, STIMULATION (U)

SUBJECTIVE RESPONSE LATENCIES FROM 36 SS WERE  
USED AS AN INDEX OF THRESHOLD ACROSS FOUR INTENSITIES  
OF ANGULAR ACCELERATION (1.5, 3, 6, AND 12 DEGREES/  
SEC SQ.) UNDER THREE DIFFERENT VISUAL CONDITIONS.  
THESE INCLUDED TOTAL DARKNESS (D), A SIMPLE,  
STRUCTURED VISUAL ENVIRONMENT WHICH ROTATED WITH  
S(LA), AND A HOMOGENEOUS, ILLUMINATED VISUAL FIELD  
(L). THE RESULTS INDICATE THAT WHILE  
ILLUMINATION OF THE STRUCTURED VISUAL FIELD LOWERS  
SUBJECTIVE THRESHOLD FOR ANGULAR ACCELERATION, ITS  
DIFFERENTIAL EFFECT IS REDUCED WITH INCREASED  
ACCELERATION INTENSITIES. VISUAL FIELD  
ARTICULATION ENHANCES THRESHOLD SENSITIVITY WHEN  
COMPARED WITH DARKNESS, BUT NOT WHEN L X LA  
COMPARISONS ARE MADE. (AUTHOR) (U)

UNCLASSIFIED

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00529

AD-662 053 6/19 6/18

SCHDOL OF AEROSPACE MEDICINE BROOKS AFB TEX  
THE INFLUENCE OF CHRONIC ACCELERATION ON THE EFFECTS  
OF WHOLE BODY IRRADIATION IN RATS AT 760 MH OF  
MERCURY, (U)

MAY 67 11P CASEY, HAROLD W. ;  
CORDY, DONALD ; GOLDMAN, MARVIN ; SMITH, ARTHUR H.

REPT. NO. SAM-TR-66-347

UNCLASSIFIED REPORT

AVAILABILITY: PUBLISHED IN AEROSPACE MEDICINE V38  
N5 P451-7 MAY 1967.

DESCRIPTORS: (\*ACCELERATION TOLERANCE, \*WHOLE  
BODY IRRADIATION), RATS,  
ADAPTATION (PHYSIOLOGY), HISTOLOGY, LIPIDS,  
MORTALITY RATES, ACCELERATION, PATHOLOGY, BODY  
WEIGHT (U)

STUDIES OF THE COMBINED EFFECTS OF CHRONIC  
ACCELERATION AND ACUTE CD60 WHOLEBODY IRRADIATION  
WERE PERFORMED ON RATS. RATS EXPOSED TO  
ACCELERATIVE FORCES (2.0 TO 2.0G), PRODUCED BY  
CONTINUOUS CENTRIFUGATION, WERE OBSERVED FOR PERIODS  
UP TO FOUR MONTHS. DELETERIOUS EFFECTS WERE NOT  
PRODUCED BY ACCELERATION PER SE, AS PHYSIOLOGIC  
ADAPTATION WAS EVIDENT BY THE SEVENTH TO FOURTEENTH  
DAY. ON GROSS AND HISTOLOGIC EXAMINATIONS A  
DEPLETION OF BODY FAT DEPOSITS AND A REDUCTION IN  
BODY MASS WERE THE ONLY DETECTABLE DIFFERENCES IN  
ACCELERATED RATS WHEN COMPARED WITH CONTROL RATS.  
CONTINUOUS ACCELERATION, IMMEDIATELY FOLLOWING  
IRRADIATION, INCREASED RADIATION MORTALITY AND THE  
MORTALITY INCREASED PROGRESSIVELY WITH INCREASES IN  
THE ACCELERATIVE FORCE. PRIOR ADAPTATION OF RATS  
TO ACCELERATION HAD NO INFLUENCE ON THE INCREASED  
MORTALITY. DECELERATION TO NORMAL GRAVITY FOLLOWED  
BY IRRADIATION HAD NO EFFECT ON MORTALITY. IN  
ACCELERATED-IRRADIATED RATS THAT DIED, THE LESIONS  
FOUND BY GROSS AND HISTOLOGIC EXAMINATIONS WERE  
TYPICAL OF THOSE PRODUCED BY RADIATION.  
ACCELERATED RATS, SACRIFICED 30 DAYS FOLLOWING  
IRRADIATION, HAD LESIONS COMPARABLE TO NON-  
ACCELERATED IRRADIATED RATS INDICATING THAT THE  
PATHOLOGIC CHANGES PRODUCED BY IRRADIATION WERE NOT  
ALTERED BY ACCELERATION. THE RESULTS SHOW THAT THE  
BIOLOGIC RESPONSE TO WHOLE-BODY IRRADIATION IS  
ALTERED BY CHANGING THE WEIGHT TO MASS RATIO WITH  
ACCELERATIVE FORCES ABOVE NORMAL GRAVITY. THE  
EXACT CAUSE OF THE INCREASED MORTALITY WAS NOT  
DETERMINED. THESE FINDINGS SUGGEST ADDITIONAL (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200929

AD-662 197 6/18 6/19  
SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX  
FURTHER RESEARCH INTO THE EFFECT OF IONIZING  
RADIATION COMBINED WITH G-LOADING DURING SPACE  
FLIGHT, (U)  
67 20P ANTIPOV, V. V. IDAVYDOV, B.  
I. IPANCHENKOVA, E. F. ISAKSONOV, P. P. I  
REPT. NO. SAH-TT-R-441-1267

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF CONGRESS OF THE  
INTERNATIONAL ASTRONAUTICAL FEDERATION (18TH),  
BELGRAD, 25-30 SEP 67. PAPERS, NP., NO.

DESCRIPTORS: (\*RADIATION EFFECTS, \*ACCELERATION  
TOLERANCE), RADIATION TOLERANCE, ASTRONAUTS,  
SPACE FLIGHT, RADIOLOGICAL DOSAGE, MORTALITY  
RATES, MATHEMATICAL ANALYSIS, MICE, USSR (U)

MATERIAL IS REVEALED REPRESENTING FURTHER  
DEVELOPMENT IN THE RESEARCH INTO THE RESPONSIVENESS  
OF AN IRRADIATED ORGANISM TO VARIOUS SPACEFLIGHT  
FACTORS. IN PARTICULAR, AN ATTEMPT WAS MADE TO  
EVALUATE THE ROLE OF PROCESSES ARISING WITHIN THE  
IRRADIATED ORGANISM AS IT RESPONDS TO 'CHRONIC' G-  
LOADING. PRINCIPLES CONCERNING THE FEASIBILITY OF  
EXTRAPOLATING OUR EXPERIMENTAL RESULTS TO MAN ARE  
OUTLINED AS WELL AS THE MANNER IN WHICH ORIENTATIONAL  
DATA WAS COLLECTED ON THE MAXIMUM POSSIBLE EXPOSURE  
(MPE) AS EVALUATED IN THE LIGHT OF CRITERIA FOR  
ACCELERATION TOLERANCE. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY    SEARCH CONTROL NO. Z00529

AD-664 211            6/12        6/19  
NAVAL AEROSPACE MEDICAL INST PENSACOLA FLA  
A COUNTERROTATOR FOR HUMAN CENTRIFUGE  
APPLICATION, (U)  
OCT 67    17P        HIX, W. CARROLL ;  
ANDERSON, JOHN J. ;  
REPT. NO. NAM-1020  
CONTRACT: NASA ORDER-R-93  
PROJ: MR005.04-0021.152

UNCLASSIFIED REPORT

DESCRIPTORS: (•FLIGHT SIMULATORS, DESIGN),  
(•CENTRIFUGES, HUMANS), SPACE MEDICINE,  
ROTATION, VESTIBULAR APPARATUS, ACCELERATION,  
RESPONSES, DRIVES, CONFIGURATION, CONTROL  
PANELS (U)  
IDENTIFIERS: COUNTERROTATORS (U)

A NEW MAN-RATED VESTIBULAR RESEARCH DEVICE,  
IDENTIFIED AS THE COUNTERROTATOR (CORO), WAS  
DEVELOPED TO INVESTIGATE MAN'S RESPONSE TO THE  
DYNAMIC LINEAR ACCELERATION ENVIRONMENT AFFORDED BY  
COUNTERROTATION ABOARD A CENTRIFUGE. THE DEVICE  
PROPER IS A SMALL EARTH-VERTICAL ROTATOR WHICH  
UTILIZES A DC TORQUE MOTOR OPERATED AS A CLOSED-  
LOOP POSITION SERVO TO TURN A SEATED SUBJECT ABOUT  
HIS Z HEAD AXIS. WHEN INSTALLED ABOARD THE RADIAL  
ARM OF THE CORIOLIS ACCELERATION PLATFORM  
(CAP), A CENTRIFUGE-LIKE ROTATOR, THE CORO DRIVE  
SYSTEM WILL TRACK THE ANGULAR MOTIONS OF CAP OVER  
THE 0- TO 100-DEG/SEC VELOCITY RANGE AT ANGULAR  
ACCELERATIONS EXTENDING TO 15 DEG/SQ SEC. THE  
DEVICE IS RATED TO ACHIEVE THIS 1:1 COUNTERROTATION  
CAPABILITY IN LOW-LEVEL, VARIABLE MAGNITUDE,  
CENTRIPETAL ACCELERATION FIELDS EXTENDING FROM 0 TO  
1.75 G NOMINAL. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTRL NO. ZDD529

AD-664 553 6/19  
AEROSPACE MEDICAL RESEARCH LABS WRIGHT-PATTERSON AFB  
OHIO

THE HUMAN SPINAL COLUMN AND UPWARD EJECTION  
ACCELERATION: AN APPRAISAL OF BIOOYNAMIC  
IMPLICATIONS. (U)

DESCRIPTIVE NOTE: FINAL REPT. JUL 65-JUN 66,

SEP 67 61P HENZEL, JOHN H. ;

REPT. NO. AMRL-TR-66-233

PROJ: AF-7231

TASK: 7231D1

UNCLASSIFIED REPORT

DESCRIPTORS: (\*EJECTION,  
TOLERANCES(PHYSIOLOGY)), (\*ACCELERATION  
TOLERANCE, \*SPINAL COLUMN), AVIATION INJURIES,  
COMPRESSIVE PROPERTIES, LOADING(MECHANICS),  
WOUNDS + INJURIES, DEFORMATION, PROBABILITY,  
IMPACT, STRESS(PHYSIOLOGY),  
FRACTURES(BONE), ANATOMY, ESCAPE  
SYSTEMS(AEROSPACE), DESIGN (U)

VERTEBRAL COMPRESSION REPRESENTS A SIGNIFICANT  
PERCENTAGE OF THE MORBIDITY ASSOCIATED WITH UPWARD  
EJECTION. VERTEBRAL AND INTERVERTEBRAL STRUCTURE  
REACTS TO AND IS SOMETIMES IRREVERSIBLY ALTERED BY  
EJECTION ACCELERATION. DESIGN AND MATERIAL  
PROPERTIES OF THE NORMAL VERTEBRAL COLUMN ARE  
SUFFICIENTLY CONSTANT THAT WHEN STRUCTURAL  
CHARACTERISTICS ARE DEFINED AND ACCELERATION PROFILES  
KNOWN, PREDICTION OF FAILURE MAY BE MADE.  
COMPRESSIVE LOAD ANALYSES OF VERTEBRA-OISC  
COMPLEXES DEMONSTRATED THAT THE VERTEBRAL ENO-PLATES  
ARE THE INITIALLY FAILING STRUCTURES OF THE SPINAL  
COLUMN. FROM EXPERIMENTAL DATA ON VERTEBRAL  
BREAKING-LOADS, ACCEPTABLY ACCURATE PROBABILITY-OF-  
INJURY CURVES FOR STATIC LOADING WERE GENERATED.  
THESE DATA TOGETHER WITH DATA DESCRIBING THE  
DYNAMIC RESPONSE CHARACTERISTICS OF THE HUMAN BODY  
PERMIT CALCULATION OF THE PROBABILITY-OF-INJURY FOR  
DYNAMIC LOADING PRODUCED BY EXPOSURE TO IMPACT  
ACCELERATIONS. AS AN AID TO THE DESIGNER OF  
EJECTION SYSTEMS, APPLICATION OF THESE CONCEPTS  
SHOULD REFINE THE ESTIMATE OF 'SAFE' ACCELERATION  
PROFILES AND MINIMIZE THE RISK OF IRREVERSIBLE  
VERTEBRAL DEFORMATION. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00529

AO-665 413 6/19  
SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX  
EFFECTS OF HIGH ACCELERATION ON VESTIBULO-OCULAR  
RESPONSES, (U)  
SEP 67 14P DOWD, PATRICK J. ;  
WING, MORGAN E. ; CRAMER, ROBERT L. ;  
COLLINS, FREDERICK G. ;  
REPT. NO. SAM-TR-67-93  
PROJ: AF-7750  
TASK: 775003

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ACCELERATION TOLERANCE,  
\*VESTIBULAR APPARATUS), RESPONSES, NYSTAGMUS,  
STIMULATION, CENTRIFUGES, PILOTS, CENTRAL  
NERVOUS SYSTEM, STRESS (PHYSIOLOGY), SPACE  
MEDICINE (U)  
IDENTIFIERS: CORIOLIS STIMULATION, CALORIC  
STIMULATION (U)

PRELIMINARY INVESTIGATIONS INTO THE EFFECTS OF HIGH  
LINEAR ACCELERATIONS ON THE VESTIBULO-OCULAR  
RESPONSES TO BOTH CALORIC AND CORIOLIS STIMULATIONS  
WERE MADE. PILOTS WERE SUBJECTED TO SHORT-DURATION  
ACCELERATIONS ON THE USAF SCHOOL OF AEROSPACE  
MEDICINE CENTRIFUGE. A SPONTANEOUS SLOW-PHASE  
DOWNWARD NYSTAGMUS WAS OBSERVED IN SOME PILOTS IN  
POST-CENTRIFUGE TESTS. SOME PERIPHERAL AND  
CENTRAL-NEURAL MODIFICATION RESULTING FROM  
CENTRIFUGATION WAS OBSERVED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00529

AD-665 849 6/19 6/5

SYSTEMS RESEARCH LABS INC SAN ANTONIO TEX  
RESEARCH ON THE HUMAN PHYSIOLOGIC RESPONSE TO  
PROLONGED ROTATION AND ANGULAR ACCELERATION. A.  
ENGINEERING ACTIVITIES; B. PHYSIOLOGIC  
ACTIVITIES.

(U)

DESCRIPTIVE NOTE: REPT. FOR JAN-DEC 66,  
SEP 67 99P ROTHE, W. E. POPE, EDWARD  
E. ILIM, SAMUEL T. FLETCHER, JOHN G. I

CONTRACT: AF 41(609)-2897

PRDJ: AF-7930

TASK: 793003

MONITOR: SAM TR-67-69

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AVIATION MEDICINE, \*ACCELERATION  
TOLERANCE), (\*STRESS(PHYSIOLOGY),  
ACCELERATION), FLIGHT SIMULATORS,  
PERFORMANCE(HUMAN), ROTATION,  
INSTRUMENTATION, MONITORS, RESPONSES,  
TELEMETERING DATA

(U)

IDENTIFIERS: BIOSENSORS

(U)

PHYSIOLOGIC RESEARCH HAS EXPLORED THE RESPONSES OF  
HUMANS TO ROTATION AND ACCELERATION. THE TEST  
VEHICLE WAS THE ROTATIONAL FLIGHT SIMULATOR, AN  
AIR BEARING SUSPENDED SPHERE WITH UNRESTRICTED  
ROTATIONAL FREEDOM PROPELLED BY INTERNALLY MOUNTED  
INERTIA RINGS AND, LATER, BY A SINGLE AXIS EXTERNAL  
ORIVE ASSEMBLY. ENGINEERING EFFORTS ESTABLISHED  
THE DYNAMICS AND IMPROVED THE CONTROL OF THE VEHICLE.  
INSTRUMENTATION WAS PROVIDED FOR THE READOUT,  
DISPLAY, AND RECORDING OF SIGNIFICANT DATA SERVING  
FOR PHYSIOLOGIC EVALUATION AND MEDICAL MONITORING.  
THE DATA WERE TELEMETERED; PICTORIAL DISPLAY OF THE  
SUBJECT AND TWO-WAY COMMUNICATION LINKS WERE  
PROVIDED. A TOTAL OF 138 EXPERIMENTS YIELDED VALUABLE  
PHYSIOLOGIC AND HUMAN PERFORMANCE INFORMATION IN A  
ROTATIONAL ENVIRONMENT FROM FRACTIONAL TO 16 RPM AND  
FOR SEVERAL MINUTES TO A MAXIMUM OF 30 MINUTES.  
THE SUBJECTS CONSISTED OF 7 YOUNG, HEALTHY MALES.  
RESULTS INDICATED THAT THE RFS PROPERLY USED AND  
INSTRUMENTED REPRESENTS A VALUABLE AND UNIQUE TEST  
VEHICLE; THAT CHANGES IN HEART RATE, AND ECG  
READINGS DEPEND ON BODY POSITION WITH RESPECT TO  
GRAVITY; THAT ELECTRO-OCULOGRAM, SUBJECTIVE  
SENSATIONS, INCIPIENT NAUSEA, AND ABILITY OF THE  
PILOT TO RIGHT THE STATIONARY SPHERE AFTER TUMBLING--  
ALL DEPEND ON THE RATE, DURATION, AND AXIS PATTERN  
OF ROTATION. (AUTHOR)

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200529

AD-656 178 6/19 6/16  
ARMY MEDICAL RESEARCH LAB FORT KNOX KY  
ADAPTATION TO PROLONGED CONSTANT ANGULAR  
ACCELERATION. (U)  
DESCRIPTIVE NOTE: PROGRESS REPT.,  
JAN 68 19P BROWN, JAMES H. ;  
WOLFE, JAMES W. ;  
REPT. NO. USAMRL-764  
PROJ: DA-3A025601A819

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ACCELERATION,  
\*ADAPTATION(PHYSIOLOGY)), (\*VESTIBULAR  
APPARATUS, ACCELERATION TOLERANCE), EYE,  
REFLEXES, NYSTAGMUS, RESPONSES,  
ELECTROPHYSIOLOGY, PSYCHOPHYSICS, SPACE MEDICINE (U)

TWO INDEPENDENT GROUPS OF NORMAL HUMAN SUBJECTS  
WERE EXPOSED TO A NUMBER OF LONG-DURATION (UP TO 96  
SEC), RELATIVELY HIGH-INTENSITY (2 DEGREES/SEC SQ  
- 24 DEGREES/SEC SQ) CONSTANT, ANGULAR  
ACCELERATIONS. NYSTAGMIC DECREMENTS DURING  
STIMULATION WERE CLEARLY EVIDENT. THE DECREMENTS  
WERE INITIATED AT ABOUT THE SAME TIME AFTER STIMULUS  
ONSET (30-75 SEC) FOR ALL ACCELERATIONS USED.  
THE DECREMENTS IN THE NYSTAGMIC RESPONSES WERE  
COMPARED TO RELATED FINDINGS FOR BOTH SUBJECTIVE AND  
ELECTROPHYSIOLOGICAL RESPONSES. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTRL NO. ZDD529

AD-666 379 6/19 14/2  
NAVAL AEROSPACE MEDICAL INST PENSACOLA FLA  
INSTRUMENTATION FOR THE CORIOLIS ACCELERATION  
PLATFORM. (U)  
DESCRIPTIVE NOTE: JOINT REPT.,  
NDV 67 28P HIXSDN, W. CARROLL ;  
REPT. NO. NAMI-1022  
CONTRACT: NASA DROER-R-93  
PRDJ: NAVMEO-MR009.04-0021  
TASK: MR009.04-0021-194

UNCLASSIFIED REPORT

DESCRIPTORS: (+ACCELERATION TOLERANCE, TEST  
EQUIPMENT), SPACE MEDICINE, INSTRUMENTATION,  
ACCELERATION, VESTIBULAR APPARATUS, TRANSDUCERS,  
DISPLAY SYSTEMS, DATA PROCESSING SYSTEMS, SLIP  
RINGS, CONTRL PANELS, CIRCUITS, ACOUSTIC  
EQUIPMENT (U)  
IDENTIFIERS: +BIOINSTRUMENTATION, +CORIOLIS  
ACCELERATION PLATFORM (U)

THE REPORT DESCRIBES A GENERAL-PURPOSE  
INSTRUMENTATION SYSTEM DEVELOPED FOR USE IN  
CONJUNCTION WITH THE CORIOLIS ACCELERATION  
PLATFORM, A COMBINED LINEAR AND ANGULAR MOTION  
DEVICE RECENTLY INSTALLED AT THE VESTIBULAR RESEARCH  
FACILITIES OF THIS ACTIVITY. THE SYSTEM, BASED ON  
THE USE OF STANDARD COMMERCIALY AVAILABLE EQUIPMENT,  
PROVIDES THE BASIC TRANSDUCERS, SIGNAL-CONDITIONING  
CIRCUITRY, AND RECORDING INSTRUMENTS REQUIRED FOR THE  
ACQUISITION, DISPLAY, AND STORAGE OF A WIDE VARIETY  
OF COMMONLY COLLECTED BIOLOGICAL AND BIOENVIRONMENTAL  
MEASUREMENT DATA. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00529

AO-669 017 6/19  
GENERAL DYNAMICS/ASTRONAUTICS SAN DIEGO CALIF  
EFFECTS OF ACCELERATION AND 'G' LOADINGS ON MAN AND  
ANIMALS 1945-1959; A BIBLIOGRAPHY. (U)  
MAY 59 7P PECK, T. P. ;  
REPT. NO. GDA-L-59-4-20

UNCLASSIFIED REPORT

DESCRIPTORS: (+ACCELERATION TOLERANCE,  
BIBLIOGRAPHIES), STRESS(PHYSIOLOGY), SPACE  
MEDICINE, AVIATION MEDICINE, HUMANS,  
ANIMALS (U)

THE BIBLIOGRAPHY ON THE EFFECTS OF ACCELERATION ON  
HUMANS AND ANIMALS LISTS REPORTS COMPLETED FROM 1945-  
1959. THE LIST INCLUDES 58 ARTICLES, 21 PAPERS AND  
DOCUMENTS, AND 4 BOOKS. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200529

AD-670 460 6/19

NAVAL AIR DEVELOPMENT CENTER JOHNSVILLE PA AVIATION  
MEDICAL ACCELERATION LAB  
PILOT PERFORMANCE AND TOLERANCE STUDIES OF ORBITAL  
RE-ENTRY ACCELERATION.

(U)

DESCRIPTIVE NOTE: LETTER REPT.,

SEP 58 9P SHEPLER, HERBERT G. ;

REPT. NO. NADC-MA-8

PROJ: TED ADC AE-1412

UNCLASSIFIED REPORT

DESCRIPTORS: (•ACCELERATION TOLERANCE, PILOTS),  
PERFORMANCE (HUMAN), ATMOSPHERE ENTRY, SPACE  
MEDICINE, VERTIGO, LIFT, OSCILLATION,  
ASTRONAUTS

(U)

THE REPORT CONCERNS A PRELIMINARY STUDY OF HUMAN  
TOLERANCE TO THE RE-ENTRY ACCELERATIONS EXPECTED IN  
ZERO LIFT VEHICLES. THE STUDY WAS UNDERTAKEN TO  
ASCERTAIN WHETHER A HUMAN SUBJECT COULD TOLERATE  
ORBITAL RE-ENTRY ACCELERATION PATTERNS ASSOCIATED  
WITH THE NATIONAL ADVISORY COMMITTEE FOR  
AERONAUTICS (NACA) MANNED SPACE CAPSULE.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200529

AO-670 823 6/19

SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX  
EFFECT OF +GZ AND +GX ACCELERATION ON PERIPHERAL  
VENOUS ADH LEVELS IN HUMANS, (U)

DEC 67 9P ROGGE, JAMES O. ; MOORE, WARD

W. ; SEGAR, WILLIAM E. ; FASOLA, A. F. ;

REPT. NO. SAM-TR-67-286

PROJ: AF-7930

TASK: 973003

UNCLASSIFIED REPORT

AVAILABILITY: PUBLISHED IN JOURNAL OF APPLIED  
PHYSIOLOGY V23 N6 P870-4 DEC 1967.

DESCRIPTORS: (+ACCELERATION TOLERANCE, PITUITARY  
HORMONES), (+PITUITARY HORMONES, SECRETION),  
BLOOD CHEMISTRY, PRESSURE SUITS, URINE,  
VOLUME, STRESS (PHYSIOLOGY) (U)

IDENTIFIERS: +ANTIDIURETIC HORMONE (U)

THE EFFECT OF +2 GZ AND +2 GX ACCELERATION  
FOR 30 MIN ON THE PERIPHERAL VENOUS ADH LEVELS IN  
HUMAN SUBJECTS WAS STUDIED ON THE UNITED STATES  
AIR FORCE-SAM HUMAN CENTRIFUGE. A MEAN RISE  
IN THE BLOOD ADH LEVEL OF 2.97 MICRO U/ML ( $P < 0.05$ )  
WAS FOUND DURING THE +GZ RUNS, AND THIS  
RISE COULD BE INHIBITED BY HAVING THE SUBJECTS WEAR  
AN ANTI-G SUIT INFLATED TO 60 MM HG. A MEAN  
DECREASE IN THE BLOOD ADH LEVEL OF 0.89 MICRO U/  
ML ( $P < 0.05$ ) WAS FOUND DURING GX ACCELERATION.  
THESE RESULTS SUPPORT THE ASSUMPTIONS OF PREVIOUS  
AUTHORS THAT CHANGES IN URINE VOLUME DURING +GZ AND  
+GX ACCELERATION ARE PROBABLY A RESULT OF CHANGES  
IN ADH SECRETION. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 200529

AD-671 855 6/19  
CIVIL AEROMEDICAL INST OKLAHOMA CITY OKLA  
ADAPTATION TO VESTIBULAR DISORIENTATION. VI. EYE-  
MOVEMENT AND SUBJECTIVE TURNING RESPONSES TO VARIED  
DURATION OF ANGULAR ACCELERATION, (U)  
MAY 67 12P GUEORY, FRED E. ;  
COLLINS, WILLIAM E. ;  
MONITOR: FAA-AM 67-7

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ACCELERATION TOLERANCE,  
\*NYSTAGMUS), VESTIBULAR APPARATUS,  
ADAPTATION (PHYSIOLOGY),  
SENSATION (PHYSIOLOGY), RESPONSES, REFLEXES,  
SENSORY PERCEPTION, AVIATION MEDICINE (U)

TURNING SENSATIONS AND EYE MOVEMENT RESPONSES  
DURING ANGULAR ACCELERATIONS MAY SHOW ADAPTATION  
EFFECTS OF SIGNIFICANCE TO UNDERSTANDING VESTIBULAR  
REACTIONS DURING CERTAIN AIRCRAFT MANEUVERS. IN  
THIS STUDY, A DIRECT RELATIONSHIP FOUND BETWEEN  
DURATION OF ACCELERATION AND (A) DECLINE OF  
RESPONSE DURING ACCELERATION, (B) RATE OF DECLINE  
OF RESPONSE AFTER ACCELERATION, AND (C) MAGNITUDE  
OF SECONDARY REACTION, IS REGARDED AS AN INDICATION  
OF A CENTRAL PROCESS WHICH LIMITS A PROLONGED  
VESTIBULAR PRIMARY REACTION. THE PROCESS IS  
MANIFESTED BY ITS INFLUENCE ON RELATIVELY BASIC  
REFLEX REACTIONS (NYSTAGMUS) IN THE CAT, AND IS  
MORE PROMINENTLY MANIFESTED IN MAN BY ITS INFLUENCE  
ON SENSORY PERCEPTION. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00529

AO-672 446 6/19

SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX  
PERIPHERAL VENOUS RENIN LEVELS DURING +GZ  
ACCELERATION, (U)

OCT 67 9P ROGGE, JAMES O. IFASOLA, A.  
F. IMARTZ, B. L. I  
REPT. NO. SAM-TR-67-262

UNCLASSIFIED REPORT

AVAILABILITY: PUB. IN AEROSPACE MEDICINE, V38  
N10 P1024-1028 1967.

DESCRIPTORS: (+PEPTIDE HYDROLASES, SECRETION),  
(+ACCELERATION TOLERANCE, BLOOD CHEMISTRY),  
STRESS (PHYSIOLOGY), CARDIOVASCULAR SYSTEM,  
RESPONSES, PRESSURE SUITS, AUTONOMIC NERVOUS  
SYSTEM, SPACE MEDICINE (U)

IDENTIFIERS: +RENIN, ANGIOTENSINS (U)

RENIN SECRETION, AS MEASURED BY CHANGES IN  
PERIPHERAL VENOUS RENIN LEVELS, WAS USED TO EVALUATE  
THE PART PLAYED BY THE RENIN-ANGIOTENSIN SYSTEM IN THE  
RESPONSE TO +GZ ACCELERATION. CENTRIFUGE RUNS  
WERE DONE ON THE USAF SAM HUMAN CENTRIFUGE AND  
THE SUBJECTS WERE MEMBERS OF THE USAF SAM  
ACCELERATION/DECELERATION PANEL. A LARGER  
INCREASE IN THE RENIN LEVEL WAS FOUND EACH TIME THE  
RUN DURATION WAS INCREASED AT +2GZ. THE MEAN  
INCREASE IN THE 20 MINUTE SAMPLES WAS 0.36 NG./ML.  
(P<0.05) AND IN THE 30 MINUTE SAMPLES WAS 0.76  
NG./ML. (P<0.01). A MEAN RISE OF 0.63 NG./  
ML., FOUND AFTER 30 MINUTES AT +2GZ WHILE WEARING  
AN ANTI-G SUIT, WAS NOT SIGNIFICANTLY DIFFERENT  
FROM THE RISE FOUND IN THE 30 MINUTE RUNS WITHOUT THE  
G-SUIT. THE RENIN-ANGIOTENSIN SYSTEM MAY PLAY A  
PART IN THE RESPONSE TO +GZ ACCELERATION, EITHER  
ALONE OR IN CONJUNCTION WITH THE AUTONOMIC NERVOUS  
SYSTEM. (AUTHOR) (U)

UNCLASSIFIED

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. ZDD929

AD-672 448 6/19

SCHOOL OF AEROSPACE MEDICINE BROOKS AFB TEX  
ABDOMINAL BLOOD FLOW CHANGES DURING ACCELERATION  
STRESS IN ANESTHETIZED DOGS,

(U)

FEB 68 9P STONE, H. L. ; ALEXANDER, W.

C. I

REPT. NO. SAM-TR-67-268

UNCLASSIFIED REPORT

AVAILABILITY: PUB. IN AEROSPACE MEDICINE, V29 N2  
P115-119 FEB 68.

DESCRIPTORS: (+ACCELERATION TOLERANCE,  
+CARDIOVASCULAR SYSTEM), BLOOD CIRCULATION,  
ABDOMEN, STRESS (PHYSIOLOGY), BLOOD VOLUME,  
MEASUREMENT, ELECTRODES, PULSE RATE, BLOOD  
PRESSURE, IMPLANTS, TISSUES (BIOLOGY)

(U)

THE CHANGES IN ABDOMINAL BLOOD FLOW DURING  
ACCELERATION STRESS WERE MEASURED BY A HYDROGEN  
ELECTRODE TECHNIQUE USED IN NINE ANESTHETIZED DOGS.  
THE ELECTRODES WERE IMPLANTED IN THE RENAL CORTEX,  
ADRENAL GLAND, AND THE SMALL INTESTINE.  
MEASUREMENTS OF TISSUE BLOOD FLOW, HEART RATE, AND  
MEAN ARTERIAL PRESSURE WERE MADE AT LEVELS OF  
ACCELERATION UP TO +12G IN THE SUPINE POSITION.  
THE POSITION OF THE ANIMAL WAS CHANGED IN 10 DEGREE  
INCREMENTS TOWARD THE HEAD-UP POSITION WITH 30  
DEGREE-HEADUP TILT BEING THE MAXIMUM TILT USED.  
THE ABOVE MEASUREMENTS WERE REPEATED AT EACH G  
LEVEL UNTIL NO DISCERNIBLE TISSUE FLOW COULD BE  
MEASURED. THE TISSUE BLOOD FLOW WAS FOUND TO  
REMAIN WITHIN NORMAL LIMITS UP TO 4 OR 8 +GX IN THE  
SUPINE AND 10 DEGREE-HEAD-UP POSITIONS, BUT WAS FOUND  
TO BE SIGNIFICANTLY REDUCED ABOUT THESE G LEVELS.  
IN THE 20- AND 30 DEGREE-HEAD-UP POSITIONS A MORE  
RAPID DECLINE IN TISSUE FLOW OCCURRED. THE CHANGES  
IN MEAN ARTERIAL PRESSURE AND HEART RATE WERE  
RECORDED. IN OTHER INVESTIGATIONS THE MAGNITUDE OF  
THE +GZ VECTOR DURING ACCELERATION STRESS SEEMS TO  
DETERMINE THE POINT OF DETERIORATION OF  
CARDIOVASCULAR FUNCTION, BUT AT HIGH +GX  
ACCELERATIONS, DETERIORATION OF CARDIOVASCULAR  
FUNCTION WAS ALSO OBSERVED. (AUTHOR)

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UNCLASSIFIED

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. Z00529

AO-672 927 6/19 14/2  
ADVISORY GROUP FOR AEROSPACE RESEARCH AND DEVELOPMENT  
PARIS (FRANCE)  
PRINCIPLES OF BIODYNAMICS: SECTION A. CHAPTER V.  
DESCRIPTIVE CATALOG OF AEROSPACE MEDICAL BIODYNAMICS  
FACILITIES IN THE UNITED STATES. (U)  
68 75P

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: NATO FURNISHED.

DESCRIPTORS: (+ACCELERATION TOLERANCE, TEST  
FACILITIES), AVIATION MEDICINE, SPACE MEDICINE,  
LABORATORY ANIMALS, HUMANS, VIBRATION,  
ROTATION, CENTRIFUGES, FLIGHT SIMULATORS,  
VELOCITY, TURBULENCE, ANALOG COMPUTERS,  
MONITORS, LINEAR SYSTEMS, CATAPULTS,  
ANTHROPOMETRY, IMPACT SHOCK, DROP TESTING (U)  
IDENTIFIERS: +BIODYNAMICS, DISORIENTATION (U)

THE DOCUMENT IS A DESCRIPTIVE CATALOG OF  
AEROSPACE MEDICAL BIODYNAMICS FACILITIES IN THE  
UNITED STATES. (U)

CORPORATE AUTHOR - MONITORING AGENCY

•ADMIRAL CORP CHICAGO ILL

• • •

A-12300

X-RAY MOTION MONITOR: LOW-  
DOSAGE, WIDE-VARIABLE-FIELD  
TELEVISION RADIOGRAPH FOR  
BIODYNAMIC ANALYSIS.  
(AMRL-TR-66-104)  
AD-690 481

•ADVISORY GROUP FOR AEROSPACE RESEARCH  
AND DEVELOPMENT PARIS (FRANCE)

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PRINCIPLES OF BIODYNAMICS:  
SECTION A. CHAPTER V. DESCRIPTIVE  
CATALOG OF AEROSPACE MEDICAL  
BIODYNAMICS FACILITIES IN THE  
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AD-672 927

•AEROMEDICAL RESEARCH LAB (6571ST)  
HOLLOMAN AFB N MEX

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6571-ARL-TR-66-8

AN INVESTIGATION OF THE  
RELATIONSHIP BETWEEN EXPERIENCE  
PARAMETERS AND SUBJECT ACCELERATION  
RESPONSE IN EXPERIMENTAL IMPACT.  
AD-670 788

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DYNAMIC RESPONSE ANALYSIS OF  
+GX IMPACT ON MAN.  
AD-457 349

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THE PHYSIOLOGICAL RESPONSES OF  
CHIMPANZEES TO SIMULATED LAUNCH AND  
RE-ENTRY ACCELERATIONS  
AD-282 883

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MAXIMUM VOLUNTARY VENTILATION  
AFTER + G SUB X IMPACT IN HUMANS.  
AD-624 626

•AERONAUTICAL SYSTEMS DIV WRIGHT-  
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THE EFFECTS OF TRANSVERSE  
ACCELERATIONS AND EXPONENTIAL TIME-  
LAG CONSTANTS ON COMPENSATORY  
TRACKING PERFORMANCE  
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ASD-TR61 743

DESCRIPTION AND PERFORMANCE  
EVALUATION OF THE AEROSPACE MEDICAL

RESEARCH LABORATORIES' VERTICAL  
ACCELERATOR

AD-287 996

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TR61 743

DESCRIPTION AND PERFORMANCE  
EVALUATION OF THE AEROSPACE MEDICAL  
RESEARCH LABORATORIES' VERTICAL  
ACCELERATOR  
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PHOTOELECTRIC EARPIECE  
RECORDINGS AND OTHER PHYSIOLOGIC  
VARIABLES AS OBJECTIVE METHODS OF  
MEASURING THE INCREASE IN TOLERANCE  
TO HEADWARD ACCELERATION (+GZ)  
PRODUCED BY PARTIAL IMMERSION IN  
WATER.  
AD-491 208

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AMRL-TDR64 70

THE EFFECTS OF VIBRATION ON  
DIAL READING PERFORMANCE.  
AD-603 963

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AMRL-TR-64-132

BLOOD OXYGEN CHANGES INDUCED BY  
FORWARD (+GX) ACCELERATION.  
AD-613 331

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AMRL-TR-64-133

END-EXPIRATORY PLEURAL  
PRESSURES IN DDGS IN SUPINE AND  
PRONE BODY POSITIONS STUDIED  
WITHOUT THORACOTOMY.  
AD-613 541

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AMRL-TR-64-144

A RESTRAINT SYSTEM FOR  
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ACCELERATION ENVIRONMENTS WITH  
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RESTRAINTS.  
AD-612 957

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MECHANICAL IMPEDANCE AS A TOOL  
IN RESEARCH ON HUMAN RESPONSE TO  
ACCELERATION.  
AD-611 946

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DISTORTION ANALYSIS OF THE  
ACCELERATION PRODUCED BY THE

AER-ARM

WESTERN GEAR CORPORATION MODEL 4010  
HIGH AMPLITUDE VIBRATION MACHINE.  
AO-620 319

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AMRL-TR-65-36  
A SUMMARY OF HUMAN TOLERANCE TO  
PROLONGED ACCELERATION.  
AO-615 570

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THE MOTION OF THE HUMAN CENTER  
OF MASS AND ITS RELATIONSHIP TO THE  
MECHANICAL IMPEDANCE.  
AO-637 182

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AMRL-TR-65-56  
CARDIOVASCULAR EFFECTS OF  
ROTATION IN THE Z AXIS,  
AO-634 080

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HUMAN TOLERANCE TO GZ 100 PER  
CENT GRAVITY SPIN.  
AO-635 719

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AMRL-TR-65-68  
EFFECT OF ANTERIOR INTERCOSTAL  
NERVE BLOCK ON THE THRESHOLD OF  
THORACIC PAIN ASSOCIATED WITH GZ  
AND GX VIBRATION.  
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TEST METHODS.  
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AMRL-TR-66-84  
MECHANICAL IMPEDANCE AS A TOOL  
IN BIOMECHANICS.  
AO-638 792

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TELEVISION RADIOGRAPH FOR  
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SINUSOIDAL VIBRATION.  
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THE VESTIBULAR ANALYZER:  
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EXPERIMENTAL DETERMINATION OF  
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THROUGH MEASUREMENT OF EYEBALL  
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• AIR FORCE OFFICE OF SCIENTIFIC  
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AN INEXPENSIVE VARIABLE-RADIUS  
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EXPERIMENTS,  
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• ARMED FORCES-NRC COMMITTEE ON BIO-  
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SUBJECTS (IMPACT). A DESCRIPTION OF  
FACILITIES IN USE AND PROPOSED  
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ROTATION DEVICES, OTHER THAN  
CENTRIFUGES AND MOTION SIMULATORS:  
THE RATIONALE FOR THEIR SPECIAL  
CHARACTERISTICS AND USE  
AD-262 435

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KY

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USAMRL-657  
ACQUISITION AND RETENTION OF  
NYSTAGMIC HABITUATION IN CATS WITH  
DISTRIBUTED ACCELERATION  
EXPERIENCE,  
AD-633 705

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USAMRL-664  
CONCOMITANT VISUAL STIMULATION  
DOES NOT ALTER HABITUATION OF  
NYSTAGMIC, OCULOGYRAL OR  
PSYCHOPHYSICAL RESPONSES TO ANGULAR  
ACCELERATION,  
AO-641 418

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INTERACTING VESTIBULAR STIMULI  
AND NYSTAGMIC HABITUATION,  
AO-649 545

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VISUAL-VESTIBULAR INTERACTION  
AND THRESHOLD FOR ANGULAR  
ACCELERATION,  
AO-660 287

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CONSTANT ANGULAR ACCELERATION,  
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PHYSIO-MECHANICAL EFFECTS OF  
ACCELERATIONS ON HUMAN BEINGS  
WORKING IN A ROTATING ENVIRONMENT,  
AO-610 132

• BUREAU OF MEDICINE AND SURGERY  
WASHINGTON D C

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NAVHED-  
ELECTROENCEPHALOGRAPHIC CHANGES

IN HUMAN SUBJECTS DURING BLACKOUT  
PRODUCED BY POSITIVE ACCELERATION,  
AO-438 485

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NAVHED-MR005.04-0021.137  
A TORQUE MOTOR SERVOMOTOR FOR  
VESTIBULAR APPLICATION,  
AO-644 003

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THE CORIOLIS ACCELERATION  
PLATFORM. A UNIQUE VESTIBULAR  
RESEARCH DEVICE,  
AO-647 311

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NAVHED-MR005.04-0032-3  
CENTRIFUGATION OF THE WHITE-  
FRONTED CAPUCHIN MONKEY, CEBUS  
ALBIFRONS (HUMBOLDT),  
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WITH ADAPTATION TO ACCELERATIVE  
FORCES DURING ROTATION,  
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PILOT BIOLOGICAL AND  
PSYCHOLOGICAL INSTRUMENTATION FOR  
MONITORING PERFORMANCE DURING  
CENTRIFUGE SIMULATIONS OF SPACE  
FLIGHT,  
AD-424 030

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NAVHED-NH-001-010-1  
THE EFFECT OF HIGH ACCELERATION  
FORCES UPON CERTAIN PHYSIOLOGICAL  
FACTORS OF HUMAN SUBJECTS PLACED IN  
A MODIFIED SUPINE POSITION: SDC  
PROJECT 9-U-37A: POSITION 3,  
AO-620 273

• CIVIL AEROMEDICAL INST OKLAHOMA CITY  
OKLA

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ADAPTATION TO VESTIBULAR  
DISORIENTATION. III. INFLUENCE ON  
ADAPTATION OF INTERRUPTING  
NYSTAGMIC EYE MOVEMENTS WITH  
OPPOSING STIMULI,  
(FAA-AH-66-37)  
AO-649 615

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ADAPTATION TO VESTIBULAR  
DISORIENTATION. VI. EYE-MOVEMENT  
AND SUBJECTIVE TURNING RESPONSES TO  
VARIED DURATION OF ANGULAR  
ACCELERATION,

COR-FRO

(FAA-AM-67-7)  
AO-671 855

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CAR1-63 29  
TASK - CONTROL OF AROUSAL AND  
THE EFFECTS OF REPEATED  
UNIDIRECTIONAL ANGULAR ACCELERATION  
ON HUMAN VESTIBULAR RESPONSES,  
AO-603 419

• CORNELL AERONAUTICAL LAB INC BUFFALO  
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13. ABSTRACT The tolerance for acceleration has been studied by experimentation on the centrifuge using human and animal subjects. Body positioning relative to the direction of the increased gravitational forces was found to be critical. In an upright position, the gravitational shifts of blood may leave the brain cells without adequate blood and oxygen supply causing "grayout" or "blackout" at 4 to 6g. This bibliography compiles 99 unclassified and unlimited references of documents that have been cataloged in the DDC collection. Volume II of this bibliography appears in a limited version and is designated by AD- 850 750.		

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